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1891.

March 4 At Mr. Watkins place
in Ash Meadows, Nevada.
Nelson, Coville & I packed our things on
a buckboard & started for Vegas Valley.
Started at 8 A. M. Coville on his horse,
Nelson & I in buckboard.

Crossed over a low divide & down into
Pahrump Valley & camped at Mr. Winters
ranch. Came 26 miles. Country rather
bare, scrubby mesas & stone washes.

Lots of soda, or alkali, in Ash Meadows,
little or none in Pahrump Valley.

In the bottom of Pahrump valley it is all
a yellowish, solid soil, bare between
the bunches of *Atriplex*. It is a dry valley
except for a few springs, some large ones.
One furnishes water to irrigate some
600 acres of barley on Mr. Winters
ranch. Broke the buckboard tongue &
I had to fix it while Nelson set trap.

Saw no game except a *Vesperugo* that
I caught in evening while cooking supper.

We found 3 horn toads & Nelson caught
some lizards. Came 26 miles.

A nice warm day, clear & pleasant.
Our trip to the Vegas is to occupy 8 or 10
days. It is about 100 miles to there.

March 5. Nelson shot an *Archibuteo*
frigens + a *Spermophile* + caught some
Peromyscus + *Dipodomys* + *Scotomys*.
Started as early as we could, about 7:30.
Went 6 miles South to White's + Gault's
ranch which is watered by another large
spring that runs about 125 inches of
water. This is a fine ranch + well kept.
They appear to be fine people. Raise
alfalfa, barley, wheat, grapes, + other fruits.
There are lots of large willows + cottonwoods
on the ranch. It seems like an oasis
in the desert. The valley is large + mainly
dry + barren. *Lycium* grows over the
lower part, several species, + *Sarcobatus* on
the mesa higher up. From here we follow
South 6 miles more to 4 mile spring,
water our horses + fill our canteens.
No more water for 20 miles on our road.
Travel till 4 o'clock + make a dry camp
with no grass. Set out our traps
+ make up skins in evening. I shot
a Jack Rabbit. saw 5. Coville saw
2 *Spermophiles*. Saw lots of old
Badger holes but no fresh ones, saw
a little fox track + plenty of Coyote
tracks. Small mammal holes are numerous.
Clear + warm. A snow squall in evening.
Came 20 miles.

4200 4550

6750
1055
5695

3825
2770
1055

March 6, Caught a few common things.

It snowed a few minutes in evening at camp last night & this morning the mountains all around were white down to edge of valley. It had cleared up but a chilly wind blew most of day.

Followed along the mesa south & east & up through some foothills to Mountain Spring, near the pass between Charleston Mts. & Mt. Ute. Same 19 miles.

Mr. Younts ranch in Pechum Valley is 2770 according to a railroad survey.

Last night's camp was 375 feet above Younts, or 3000 feet. Mountain Spring is 5675, by the aneroid. There are large snowmounds around the ranches in bottom of valley but none on dry sides of valley until we get up to 3150 feet where the first hills of a smaller species begin. They begin at the edge of the Yucca belt & extend above them, probably to top of Charlestown.

Holes that are evidently of Dipodops begin at edge of Yuccas & extend to foothills. *Tamias leucurus* is common all the way. Several pink backed holes seen. A little snow around Mt. Zia. Pinon & Cedars all around.

Tall firs higher up. The spring is about a mile or two from the divide. Caught frogs in spring, saw wren. Set traps.

* note

Should be March 7 →

403/5300 113
403
1270

4250
1055
3195

Nov. 7. Didn't get a very early start, a cold morning (12°) Had to hunt the horses. Got started at 9, went a mile & crossed the divide at a very little above the spring.

I caught a *Thomomys* & an *Onychomys* & a *Hesperomys eremicus* & 2 *H. megalotus*. Nelson got a lot of *Hesperomys* of these 2 species & a *sororiensis*. *Tamias leucurus*

tracks are common all around on the snow.

Followed down the east slope going down rapidly for 5 or 6 miles over rough & rocky road, then along the base of red sandstone cliffs 1000 feet - that have a strong resemblance to the Vermillion Cliffs of Southern Utah.

The soil & plants along the base are also like those along the base of the Vermillion Cliffs. Cedar & Piñon trees come down to foot of cliffs, below the hills are rather bare.

Came about 13 miles & camped at the Cottonwoods, an old ranch where a large spring ~~trick~~ flows out of the rocks. Cottonwood trees & Mesquites & desert Willow & scrubby live oaks. The soil is good & vegetation better than usual. Alfalfa is abundant.

Camped at 2150, made up skins & set traps. We are now where the slope & drainage are to the Colorado River. Several plants that we have not met before on this trip & that are common in the Colorado R. Valley occur here.

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Camped at 2:50, Made up skins & set traps. We are now where the slope & drainage are to the Colorado River. Several plants that we have not met before on this trip & that are common in the Colorado R. Valley occur here.

The Cat's Claw - ~~Mimosa~~ *Acacia greggii* (?)
+ the Desert Willow are examples. Cacti are
numerous. Cottonwoods in 3200 by the canal.

March 8, Sunday, Caught lots of little
Dipodomys + 2 species of *Hesperomys* + a *Tamias*
lucurus + a *Thomomys* + *Neotoma*.

Frosty morning, 25°, pleasant day.

March 9, We caught 2 species of *Hesperomys*
2 *Perognathus*, an *Onychomys*, *Tamias lucurus*
+ *Dipodomys*.

Got up early + started as early as we could
get off after picking up our traps. started at 8.
Went through a gap in the next sandstone
ridge + came out onto the edge of the
broad Vegas Valley. Half the way we are in
stony washes + the hood washed out a good deal.
Here we strike the Larrea belt again +
Yuccas + cacti are numerous. Most of the
shrubs are spiny or stinky. *Lycium* + a *Dalea*
+ 2 species of *Mimodora* + *Cercaria* are all spiny.
The ground is bare in places like all the low
valleys, small plants are starting here +
are ahead of any place we have seen before.
We travel about N.E. 15 1/2 miles + camped
at the Vegas Spring at 2 P.M. Made up
some skins + set traps. The springs are
very large. A small creek flows from each
of 3 or 4 springs, + joining they make a good
stream.

The water is warm, 73°, & is good, pure water. We caught a lot of very bright green frogs, the greenest I ever saw.

There are lots of little fish in the springs & streams. Mr. Stewart says it is not improbable that the water runs from these springs down Vegas Wash to the Colorado R. after very heavy rains, but that he has not known it to do so. He has lived here a good many years. The stream from the springs runs about 6 miles down the wash besides irrigating a large ranch.

The part of the valley near the springs is of a firm fine soil that is black & rich when watered. There are large meadows along the stream. Groves of Cottonwoods have been set out & are now large trees. Mesquits of both species are abundant, also Cottonwood & *Atriplex confertifolia* & *canescens* & *torreyi* & *Suaeda frutescens* grow over the flat bottoms. There is hardly a trace of alkali or soda in the soil.

Opilari is abundant & in blossom. Small plants have started. Almond & peach trees are loaded with blossoms. I saw one humming bird & shot & put it. 26th in morning at Cottonwoods, a warm, pleasant day down in valley. Came down about 1000 ft. They say the Vegas ranch in low part of valley is

1870 feet, from R.R. survey. The springs are probably about 100 feet higher.

Coville found a little *Perognathus* the size of a quail hanging in a cat-claw bush on middle of the valley slope by the road. It was perfectly fresh & is the first of the species we have found. Had evidently been hung up by a sprike.

Nelson & I worked on specimens till after 12 at night & Coville baked 6 loaves of bread after supper to take on a horseback trip to the Colorado R.

~~Wetmore~~

March 10, Got around as early as we could packed up & went 3 miles down to Vegas Ranch & Nelson & Coville took saddle horses & went on down the Texas Wash to the Colorado R. 25 miles. I stay to work up the Vegas. Mrs. Stuart's ranch takes all the land of any value in the valley. She has 2000 acres. It is a splendid ranch. They have large wheat & vineyards & large fields of alfalfa & grain. Their main business is raising cattle. The peach & almond trees are loaded with blossoms. Apricots are in blossom. Made up skins & set traps. Nelson got 3 & 1 one *Perognathus* & a bird not found before on this trip. 42° in morning, Warm day.

March 11, Caught 2 *Thomomys*, a *Tamias leucurus*, 3 *Hesperomys*, 3 *Perognathus*, 2 *Ochetodon*, 1 *Onychomys*, + shot a Jack Rabbit. Caught a *Mus musculus* in house. Made up skins + reset traps.
Warm & pleasant, things growing.

March 12, Caught 2 *Perognathus*, ~~an~~ *Onychomys*, an *Ochetodon*, a *Hesperomys sonoriensis*. 2 *Thomomys*, 3 *Tamias leucurus*, + bought a Badger of an Indian.
Made up the skins.
A warm, pleasant day. Cottonwoods are in blossom. Nelson & Coville did not get back from the Colorado River.

March 13, Caught a lot of things + made up skins. Nelson & Coville came about 10 o'clock & helped Nelson do up his specimens. He had a fine lot from the Colorado river. This connects our work with my old routes through Utah & Arizona. It is only 50 miles over onto the Muddy Creek where I was 2 years ago + it seems to be all open, low country between there & there.

A warm, summerlike day

March 14, Packed up & started back for Ash Meadows by the north road, around by Tonness. Went about 23.5 miles & camped at Corn Creek at 4 P.M. & set traps.

I caught 3 *Oryzomys*, 2 *Perognathus*, a *Hesperomys*, & 2 *Tamias* in morning, made up skins in evening.

Got frogs & toads & bells out of a spring 12 miles about Vegas Ranch.

Corn Creek is a little stream flowing from a large spring in the valley. The stream is a foot wide & 3 inches deep & flows about 40 rods. Large *Phragmites* & some grass & large *Helianthus annuus* grow along the stream & shade a thick jungle of several acres.

Some one has cultivated a few acres along the creek & raised corn & melons & set out a few peach trees. *Dipodomys* & *Hesperomys* & *Thomomys* are numerous among the large weeds, also cottontails. A small pond has been made. The valley is about 5 or 6 miles wide here.

The middle is clayey & is scattered over with *Atriplex* bushes. The sloping sides are thickly covered with *Larrea*, *Artemisia*, *Yucca baccata*, and small plants. A row of mesquite covered sand dunes begins at the creek & extends several miles up the valley.

A lime rock seems to lie close to the surface over the bottom of the valley.

March 15, Caught a *Thomomys* + *Dipodomys*
+ *Hesperomys* + *Onychomys*.
Started at 10 o'clock & followed up valley,
crossed a big mud-flat & turned west &
reached Towners ranch at 4 o'clock.
Came 20 miles. Road pretty good most
of way. Came over the dry, pebbly slope
most of way. *Larrea*, *Atriplex*, *Franseria*,
& *Yucca* are characteristic plants.

Towners is a small ranch, with only
enough water to irrigate 30 acres. It is
one large spring of warm water. The country
around is desert, so that the ranch is of small
value. A cool day & cloudy with a S. W.
wind. Looks some like rain.

Cooked up in evening for tomorrow.

March 16,

Got up early & had our breakfast over &
were packed & ready to start at sunrise, 6 o'clock.
A light rain fell for a few hours before daylight.
Cloudy & cool at day. Our load is light
& road pretty good. Traveled as fast as we
could. The Vegas is 1800 feet, Towners is
2750, by the R.R. survey. Crossed the divide
between Vegas Valley & Ash Meadows 17
miles west of Towners. The aneroid makes
the divide 500 feet above Towners. This
offers a low, wide passage from the Colorado
River to Ash Meadows & down the Amargosa.

Traveled till 8 P.M. & came 49 miles.
It is called 45 from Tourners to Ash Meadows
but our Odometer makes it 49.

After crossing the divide we come down into
a large basin with a wide mud flat. crossed
this & climbed over a low ridge & down into
Ash Meadows. Got in late & found
Palmer gone & the rest all in camp as we
left them.

March 17, A very warm day,
Sent Mike over to Pahump for grain and
provisions. Dikewan did not feel like
going to work but got ready for a start
tomorrow. I packed skins & fixed the
buckboard pole & did odd jobs about camp.
Set a few owl traps after dusk.
Nelson got out some traps.

March 19, Palmer returned from Daggett yesterday.
Had received a telegram saying 2 horses & a
mule & buckboard were at Keeler for Dikewan.
Some one has to go after them at once.
Nelson & I left Ash Meadows at 2 P.M.,
Nelson to go to Furnace Creek & wait for the
rest of party & I go on to Keeler for the horses.
Rode till late in evening & camped in
wash just over the divide. Came about 20
miles I guess.

March 20, Started early & followed down wash to Furnace Creek where we met Junston with the mail at Dayton. Reached Dayton at noon & spent the rest of day reading & writing letters & getting ready for morning. Shot bats & caught toads in evening. I ran through a barb wire fence in trying to head off a bat & broke the fence wire & came near breaking my neck.

A warm day, almost hot. Dayton says 84° is the warmest yet this spring.

March 21, Started early, followed down the road & crossed Death Valley 6 miles below Furnace Creek, then up a wash of the Panamint Mts. about 12 miles north of Telescope Peak I think. Found it a rough & rather difficult pass but reached the summit of the range just at sundown. Followed down a gentle slope 3 or 4 miles on the other side & camped. Hobbled my horse & turned him loose to pick bunch grass. He is about worn out. I walked & led him the last half of the day. A hot day & my canteen of water gave out, took the last small drink as I went to bed at 7:30.

The pass over which I came just reaches cedar & pines, no snow on it, but snow all above. It is near Death Valley Cañon if not it.

March 22, Got up & started before daylight followed down the wash & in about 2 miles came to an old road crossing the wash. Followed it S.W. over a ridge into other washes & on down to edge of Paviament Valley. Did not find water & being already thirsty did not dare strike across valley with an empty canteen & not knowing exactly where to find water on other side. so I turned to the south and followed edge of valley to Hot Springs to get water. Reached Hot Springs at 1 P.M. Guess I came 20 miles, walked & led my horse. Was pretty dry, had no water for 17½ hours & my horse had none for 31 hours.

after resting & drinking & eating a lunch it was too late to go any farther & a storm was coming up, so I camped at Hot Sprs. overnight. Rained a little & rained hard up the valley in evening. Hot & windy in A.M.

Found about a dozen Indians near Hot Sprs., among them Paviament Tom, the real Indian of the country.

Tried to trade my worn out horse for something that could carry me to Keeler but could only get a broken legged mule for him from Tom, so did not trade.

March 23, Packed my things all on my horse
& ~~led~~ him & started on the mail route
for Darwin. Reached the gulch below
Lookout at noon, climbed the trail &
then up the wagon road to summit of the
Argus Mts., then down into & across Case
Valley to Darwin. Reached Darwin at
8 P.M. Came 58 miles, walked all the
way & had to go slowly with the horse.
It is a hard climb over the range &
in time.

March 24 My horse had a good feed &
seemed to feel a little better. Rode him
a few miles to start with & then a little
while later on but he could hardly stand
up under me, so I walked most of the way
to Keeler, where I arrived at 5 P.M.
Found the things all right but found
there were bills to the amt. of 200 dollars
to pay, which I can't pay. Sent some
telegrams for instructions & waited.

March 25 - Succeeded in getting the things
released from freight charges through the
kindness of Mr. Wilkinson who gave a
written guarantee for the charges.
Made arrangements to pay some of the
other bills later & got things cleared up.

so as to leave tomorrow. Got the horses shod & the mule fitted with shoes, which took all the afternoon till dark.

March 26, Had a lot of things to get & to look after, so it was 9 o'clock before I got off from Keeler. The team is fat but soft & can not stand hard driving. Drove to Darwin & stopped for the night.

March 27, Left Darwin & decided to try going over the hill at Lookout instead of through Shepherd's Cañon, as the cañon is said to be washed out so as to be impassible. A Mr. Boda went with me to Lookout & helped me down the hill. Had to take off the team & unload & then tied all the wheels of the buckboard solid & gradually worked it down the steep slope over rocks & gulches. Were about 2 hours in getting it down a 1000 feet. Packed the stuff down & lost the horses around by the pack trail. Crossed the valley to Hot Spr., arriving there after dark. Had to drive slowly over sand & rocks & no road much of the way. It is the second wagon ever taken over the hill at Lookout. Caught a big sooty colored lizard in the

Minimetta Wash - I guess it is a Chuckwalla.
Saw no mammals & very few birds.

March 28. Took the mule & started up
to Pariaint before daylight for the night.
Found the road all washed to pieces &
rather a hard trip. Did not get back
to Hot Springs till 1 o'clock, ate some lunch
& hitched up & started around by Wild Rose.
Traveled slowly through stony washes without
any road, it grew dark & I camped in
the wash without food or water.
A cold day.

March 29. Found the horses in a cañon about
a mile above camp where a fence had
been put across. Followed up the cañon to
Wild Rose Spring where a 4 stamp mill stands.
Watered & talked awhile with the old miners
then & went on. Turned out of the wash &
crossed some ridges & down another
wash to Emigrant Spring & camped.
Came about 20 miles I guess. The road
is all gone in the wash & it is all a
bed of stones. A slow road to travel over.
Was in good grace most of the day but
found very little feed at the spring.
A cold day, was cold with a blanket
around me riding.

March 30, A cold night, froze around spring. Started early & continued down the same wash to Mesquite Valley, about 15 miles to the bottom of valley all the way over stones & wash-beds, a very hard road to travel. Crossed to east side of Mesquite Valley & followed down it to Death Valley, thence down the east edge of that to the Borax works, where I arrived at 11 P.M. & camped. Came 45 miles, most of way without road. Had no water at all for the horses all day & very little for myself. I washed one canteen & the other leaked, so I had no water after noon. A warm day & the horses & I were pretty thirsty when we reached the Borax works.

March 31, Came down to Bennetts wells where I found Dikeman & George.

April 1, Dikeman went on a pack & I sent George to Pahrump for grain if he succeeds in borrowing Dayton wagon at Furnace Creek.

I hunted lizards part of day & did a few little jobs that I felt needed attention. Have no traps & can not do much without. Got some fine large lizards, of 3 species.

April 2 Went up to the camp in Panamint Cañon. Found only Tie & Funston at Camp. Dr. Fisher & Nelson & Coville & Burnett had gone to Telescope Peak yesterday morning & camped over night. Took 2 burros & one saddle horse. They returned to camp about 9 P.M. just as Funston & I had made our bed of all the blankets in camp. It was tough looking party that came straggling in, cold & hungry & wet footed. Their pants and shoes wasty torn & worn off. Nelson & Dr. Fisher had each a *Spizella* & some *Hesperomys eremicus* & *Megalotus*, the *Megalotus* with the largest ears I ever saw on a *Hesperomys*.

They had had a hard trip & had not reached the highest point of Telescope. Had eaten snow until they nearly choked for water. Camped one night on top of the main ridge. Coville found 2 species of pines besides *monophylla*! *T. parryi* & *occidentalis* and *campanulatus*.

April 3 Got a bag of traps & returned to the wagon at Panamint with. Dare not leave the things there alone.

Found George, who had not succeeded in getting Day's wagon & had returned to Panamint. Can't get a wagon now for days.

Death Valley

April 4 Burnett came down with his wagon which I at once proceeded to borrow to send for grain. Caught a *Spermophile* & a lot more lizards.

April 5, Sunday, but so much depends on our getting grain as soon as possible, I started George on the trip to Pahrump as early as he could. A hot day but I have no thermometer with me. Should think it was about 90°.

April 6 caught a few *Spermophiles* & *Neotomas*. Made up skins. Could not seem to catch much. The wind howled steadily all day. A cloud of sand in the air.

April 7 Went up to the Borax works, about 3 miles above here, killed an *Oreoscoptes bullocki* & saw a lot of migrant birds. several *Microtus melanolleus*. Caught & made up a few things. A warm day, wind does not blow so much.

April 8 Did not catch much, a *Hesperomys* & a few *Neotomas*. Went up to the borax works & found some new birds.

1891

June 15. Have been with C. W. M. on a trip to Colorado River & Utah and he has kept journal since April 8 -

Hired a Mexican packer - (Belanche) and left Lone Pine for Death Valley with Dr. Fisher. Have 2 mules & a horse for packing. Camped at Keeler where we met Nelson & Dutcher & Coville & Funston -
Not uncomfortably warm -

June 16. Started from Keeler at 7:30 A.M.

Reached Darwin at 4:30 & went about 5 miles beyond & camped in Coso Valley. Rather too warm for comfort part of the day. On the dry slopes around lower lakes and all along the road to Darwin vegetation is dry, most of the small annual plants have dried up, very few flowers were seen. A few *Confarites* & *Gillies* are still in flower.

June 17 The horses went up valley about 4 miles & delayed us so we did not get started till 9 o'clock. Crossed the Argus range & down fast lookout. Got water at Gunn's mine & then struck across Pinnant Valley to Wild Rose. Saw lots of *Sarcocaulus* etc on rocks along the cañon above Lookout. Lots of *Tamias leucurus*. *Crotaphytus* *bailey* was abundant on the mountain. *Cnemidophorus tesselatus* was common in

both Cero + Panamint Valley. saw one
Dipsosaurus dorsalis in the Minnetta Gulch at 3200 ft.

The lowest point we reached in crossing Panamint Valley was 2000 ft. A hot wind blew from the S. + was uncomfortable. The brown stones were hot + had a glassy polish that I had not seen before. Most of the small plants were dried up in the valley. A few *Malvastrum rotundifolium* were in full flower on black, hot sand in bottom of valley. A pale purple *Pentstemon* grows in large bunches in the cañon above Lookout, is in full flower + very pretty, some bunches 4 feet across + very thick.

7 feet diamond hitches on two of the packs + Beluche tried + got half a diamond on the other. All the jacks rode well all day + not a rope had to be touched.

Cool + pleasant in evening at Wild Horse Sp. Saw some bats but did not get one.

Saw 4 old *Callisylla vallicola* + about 12 young ones together in the cañon above Lookout. The young ran into holes + crevices among the rocks like a lot of chipmunks.

June 18 Packed up + started at 7:50 - Went up to Coale Kilns + followed a trail from the spring over the ridge to the north + up the next gulch to summit of range. Barometer read 8500 on summit. Found an old Indian + family camped on summit. They could not talk English. Don't know where they get water, it is a long way to it on either slope.

They had a wickiup & whole household outfit. Had some young birds that I think were jays. Followed down a zigzag trail down a steep slope to the bottom of Death Valley Cañon. Struck bottom of Cañon at 5300 ft. & followed down it some 5 miles to where it opens into edge of Death Valley at 1600 ft. Then over stony wash about 5 miles more to road in bottom of Valley. A steep grade, rough road, & slow traveling down the Cañon. There is a spring off to a quarter of a mile to south of trail in the cañon at 5000 ft. There is lots of float ore near it & some prospecting has been done. There is a smaller spring lower down in Cañon above the main fork, on the south side in the bank 25 feet above bottom of cañon.

Plants. - took some notes on the plants & intend to take full notes as possible on return trip. Did not reach the road on flat till after dark - 7:30. & then took the old, upper road & nearly got stuck in the mud in middle of valley. Reached Dayton's at Furnace Creek at 12 in the night - went to bed without supper. Dayton says it was $+104^{\circ}$ during the day, but we did not get into the valley early enough to avoid the heat.

Saw 2 Side-winders in Death Valley Cañon at 1600 ft. *Callisaurus draconoides* was common up to 2300 ft. in the cañon. Death Valley Cañon trail is steep & small, but not a difficult pass. is steeper than Panamint Pass.

June 19 - Woke up with the sun shining on me & A.T. woke still later. Went out before breakfast & shot a Night Heron - a cinnamon Teal, a Blue Grosbeak, & 2 Quails. After breakfast shot a Sturnella, an *Oegilites vocifera*, *Sayornis saya*, a Wilsons Phalarope, 2 Rough-Wing Swallows. saw a *Trochilus*, 4 Ravens, 1 Turkey Buzzard - 4 *Zonaidura*, 1 Vireo, 1 Chat, 1 Night Hawk.

Made up skins - hunted & set some traps. Shot 3 *Spermophiles* & saw a lot more. They are abundant & about half grown - Dr. Fisher saw a *Microtus melanolencus* & a *Cyanospiza cyanea*.

A windy evening & bats began flying late, we saw two kinds that seem to me like *Vesperugo hesperus* & *Myotis*. I shot one swallow but can't find it. Saw a Jack Rabbit. Their tracks are numerous around the alfalfa field. A clear, quiet day - some wind in morning & evening. 108° at 2 P.M. not uncomfortably warm if you are not hard at work.

June 20, Caught a *Dipodomys deserti*, a *D. merriami*, 3 *Neotomas*, 2 *Onychomys*.

Shot a Cuckoo, saw a *Carpodacus*, A.K.F. shot 3 *Microtus melanolencus* & a Vireo & a *Passerina cyanea*. Made up skins. Warm enough - 106° at 2 P.M. Started down to Eagle Borax works at sundown & got there at 12:30 -

June 21 Slept on the grass near old borax works -
Hunted for birds all the morning - Saw 2 *Geothlypis*
occidentalis in the marsh - A *Buteo* ~~to~~ *calurus*
came & sat in a Mesquite tree just over my head -
Went down to Bennetts Wells, found a pair of
Spermotops e. hypogaea at a Badger hole between Borax
works & Bennetts Wells - Found 2 adult & 3, or more,
full grown young *Harporhynchus leucoti*. They were
in the Mesquites near Bennetts Wells - probably the
brood that came from those we supposed to be
breeding when there before. Saw several Jack
Rabbits, heard lots of *Spermophiles*, saw some
half grown *Neotomas* carrying mesquite beans &
piling them under a tree -
Made up a *Harporhynchus* skin. Laid in the
shade through the hot part of day & tried to sleep
but the heat & mosquitoes wouldn't let me -
Started back to Furnace Creek at 3:20 P.M.
& arrived there at 9:30. Found that it had been
a hot day - up to 114°

June 22 Got up at 2 o'clock, packed up & started
at 4 o'clock for Wild Rose Cañon, followed
down the valley & crossed on the road & up
across the mesa to Death Valley Cañon.
Followed up the cañon & over the divide, down
to the Coal kilns & camped at the spring
half a mile above them. Barometer read at
Furnace Creek, 4 A.M. 30.50 in. - Off. When road

Crosses salt flat, at 79.24. 30.65 in. - 0 ft.; end of Death Valley Cañon where it opens out onto valley slope 1100 ft. (10)
First spring in Cañon at 3200, 2d Spr. at 4100 ft.
3d Spr. at 375 ft. Summit of range 8100

Death Valley Cañon slopes ^{down} to the east up to 3100 ft., then
bends around & slopes N.E. It is a wide wash with
rough, stony bed and high, rocky ridges on both
sides. Bottom of wash 10 to 40 rods wide. Contains
3 or 4 small springs of not very good water.

Lizards; first *Sauraualus* seen at 1200 ft.
& these common up to about 3100, probably go higher
but we did not see them. They are digging holes in
the gravelly wash, perhaps to lay eggs in, perhaps to
hibernate in.

Crotaphytus baileyi, seen from 1100 up to 3300 ft.
Cnemidophorus tigris, seen up to 4550.

Birds; *Sialia mexicana*, 2 seen below end of
cañon at 1000 ft. - lower limit for this trip.
Amphispiza bilineata, 2 seen at 1500 ft. & others
above. *Carpodacus* & Doves common around Sprs.
Myiarchus cinerascens & *Polyptila* seen above 3000 ft.

Mammals; No mammals seen except a *Tamias*
merriami at about 6600 ft. No *Thomomys* hills seen
on the Death Valley slope. Picked up the horns of a
Mountain Sheep in the Cañon. No Bats seen at our
camp in evening.

Plants; *Atriplex hymenoclytra* comes up to
1200 ft. in the cañon.
Dalea fremontii begins at 1700 and extends up to about 3000.

Ephedra (divaricata) only seen near 1700.

Frauseria divaricata extends up to 3500.

Echinocactus polycephalus extends from 1700 up to 3000.

Cercus engelmannii seen at 1800.

Lyssium andersonii seen from 2300 to 4000.

Ephedra (viridis) begins at 1800 on the cañon side facing N.E. and runs to top of divide (8100) and on up to 9300 on N.E. slope of Telescope Peak.

Prunus fasciculatus begins in cañon at 2800 and runs up to 7100. begins on slope facing east and ends on a S.E. slope.

Atriplex confertifolia begins at 1800 in cañon but only a little & soon stops.

Salicornia mexicana - a little at 3250.

Opuntia basilaris, begins at 3000.

Pentstemon (multiflorus) abundant from 3500 to 7000 on E. slope.

Cowania mexicana begins at 3500 and goes up to 7000 on E. slope.

Eurotia lanata begins at 3500 & reaches about 7000 on E. slope.

Audubertia incana reaches from 3500 to 4500, begins on N.E. slope & ends on E. slope.

Lupinus (grandiflorus) runs from 3900 to top of ridge at 8100.

The largest, finest lupines I ever saw.

Larrea mexicana runs up the cañon to 3500, higher on side facing S.

Thamnosma montanum 4500 to 6500 on E. slope.

Artemisia tridentata begins at 4000 and runs to top of 8100 and on to 10000 on E. & W. slopes of Telescope Peak.

Grayia polygaloides is scattering from 4100 to 4700.

Tetradymia spicata a little at 4100.

Coleogyne ramosissima begins at 4500 on E. slope & ends at 6500 on S.E.

Juniper & *Pinus monophylla* begin on N.E. slope at 4700 and run up main mountains to 8200 on N.E. *Pinus monophylla* up to 9300 on S. slope. *Junipers* not so high.

Artemisia arbuscula begins at 5660 on E. slope.

Symphoricarpos begins at 5700 on E.

Cercocarpus parviflorus (?) runs from 6500 to 7000.

Ajunctia nitida (?) runs from 6500 on E. slope up to 9800 on Telescope.

Glaucofitidus found at 6600.

Acer glaberrimus begins at 7900 on E. slope + runs to 8100 on N.

Fraxinus found at 7600 on E.

Audubertia large leaved begins at 6375 on E. slope + runs to 9600.

June 23 Went to Top of Telescope Peak. Dr. Fisher + I started from camp at 7 A.M., barometer read 7200, reached the peak at 2 P.M. + barometer read 10800. A clear, cool day, a little wind + no clouds. A long, hard climb but not difficult, got back at about 7 o'clock. Took a bag of traps along but did not set any. Found no signs of *Arvicola curtatus* or any *Arvicola* or other mammals we have not taken here. Looked thoroughly for *A. curtatus* holes. Caught only *Hesperomys leucopus* in the traps I had ^{out} ~~left~~ overnight. Collected the plants on Telescope Peak and some others lower down. Took as full + careful notes on ranges as I could. Found a drove of 9 and 3 of two Indian horses ranging above 9000 ft. There is no water but plenty of snow + good grass up there. There is a nice little stream of very cold water in the cañon in which we are camped - near the Indian Corral -, a smaller one in the gulch above the corral, and we could see lots of springs down in the cañons when on the peaks; but there is no water high up, probably not above 8000 ft.

Snow lies in sheltered places on slopes facing northward down as low as 8000 ft. There is enough on the main peak to give it a white streaked appearance from a distance. In places it is 20 feet deep and some banks are half a mile long. It seems to be melting rapidly & was very wet & soft. but by 6 o'clock had begun to freeze. Water drips from the lower edge of the snow banks but runs into the loose stony ground. Found "C. King, 1844" scratched in a stone on the peak - on a monument about 4 ft. high.

Lizards: shot one *Sceloporus graciosus* at 9500 ft. no others seen -

1 Birds: Dr. Fisher reports on birds.

Mammals: *Tamias merriami* is abundant up through the Piñon. We saw one track in a snow bank at 10000 feet that seemed to be of this Chipmunk, but no other signs of them above Piñons.

Thomomys hills are abundant up to within 50 feet of the top of Telescope.

Neotoma - this nests and "vegetable pills" are common among rocks to within 100 feet of the peak. A large, hollow *Pinus aristata* is filled with sticks & cones & rubbish about 100 feet below the peak.

Hesperomys leucopus - probably ranges over the peak.

Lepus - some Rabbit the signs of a Cottontail lives high up on the mountains. We saw their excrement at about 9000 ft.

Ovis montanus, no signs of sheep seen high up, but they are known to occur here.

Plants: Those run out in yesterdays notes not given.

Pinus flexilis comes down on N.E. slope to 8100 and up to 9600 on same slope, where it meets the next species. A few trees come to within 50 feet of the top of Telescope on S.W. side.

Pinus aristata begins on N.E. slope at 9400 and goes to within 50 feet of top. The top of peak for about 50 feet is rocky & bare with only a few little shrubs - plants.

Spiraea milifolium (?) begins on the east slope of the range at 6375 and extends to the peak. a bunch of it grows on the very top.

Cercocarpus ledifolius, extends from 7200 up to 8100 on N.E. and to 9300 on S.E. slope.

Ribes lepanthum begins at 6375 on east slope & runs up to 9500 on N.E.

Ribes (thornless & viscid) begins at 9400 on N. slope & goes to top.

Ribes (very thorny in canes) common from top down 100 ft. on north side. specimens saved of this & lost.

June 24, Dr. Fisher shot 8 more *Tamias*, making 10 in all, while I wrote up my yesterdays notes. Then we made up the skins & some birds & at 3 P.M. started down the trail. Camped at Wild Rose Spr. A swarm of *Vesperugo hesperus* came out before dark. We shot 3, could see no others. A.K. shot a *Perognathus*.

Saw a Poor Will. There were 3 squaws and a kid at the spring but the woman here says they are Shoshones from Saline Valley & not Paviots.

Lizzards: *Crotaphytus wislizeni* seen up to 6550 -

Cnemidophorus tigris up to 6500.

June 25 Horses went up the cañon about 4 miles & we got a late start. Left Wild Rose Spr. at 8 o'clock. Crossed Panamint Valley, past Lookout, over the divide and down to Darwin. Reached Darwin at dark & camped in town. Rather hot in Panamint Valley, pleasant over the mountains.

Took notes on plants in crossing the Argus Range by Lookout. It is a difficult place through a steep & crooked cañon to get slope effects but I only tried conspicuous plants. The results are not good. Wild Rose Spr., 8 A.M., 4125 feet, bottom of Panamint Valley where trail crosses it 2150, Gunn's Mine (at lower house) 3100, trail strikes the road at lower end of cañon 4000. Spr. in Cañon 4500, summit 6050, bottom of Cass Valley 4250, Darwin 4750 at 7 P.M.

Plants: Up cañon above Lookout
Larrea tridentata stops at 4000 on N. slope & goes up to 4800 on slope facing S.
Salicaria mexicana stops at 4700 on N. & 5600 on S. slope.
Dalea praevalens stops at 4500 on N. & 5700 on S. slopes.
Lysium arckersonii goes over the top at 6050.
Ephedra (viridis) begins at 4300 on steep N. slope & goes over top.

Thamnosma montanum - same as last.

Covillea mexicana comes down to 4700 on N.

Yucca brevifolia begins at 4850 on S., 5000 on N.

Branseria olivacea ends at 4000 on N. & 4800 on S.

Eurotia lanata, *Mevadora spinescens*, *Grayia*, *Coleogyne*

and *Tetradymia efirasa* go over the summit -
In coming down the west side of the range I found
on S.W. slope *Dalea fremonti* at 5850 - *Salicaria*
mexicana at 5850, *Larrea* & *Franseria dumosa* at
5550. Saw a few *Sauraualus ater* in cañon -

June 25 Left Darwin at 6 & arrived at Kells at 8 PM.
Couldnt find the men I wanted to see & so did
not do much towards getting outfit together.
Not very hot. Sold the big wagon -

June 27, Found a man (Chas. Richardson) who
suits me very well. bought a light wagon
and got things all ready for a start Monday
morning. Had a lot of little things to attend to -
Packed skins & caught & made up 3 *Thomomys*.
In evening Dr. Fisher & I shot bats down by
the lake shore. Got 8 *Vesperugo velox* & 1 *Vesperugo*
& one *Vesperugo hesperus*. These are numerous -
Saw one large bat in town -
Most of the bats that I saw along the shore came
from the mountains east of the lake and flew
fast straight out over the lake. Some circled
round the springs along shore.

June 28, Sunday - The warmest day of the
season so far. 102° near the ground, 97° 25 ft.
above ground in Wilkersons box.

June 29 Got up early, got things together & started at 7 o'clock. Followed along east side of lake to Olancha (18 miles), then 12 miles farther to a ranch & camped. Road sandy much of the way. There was a *Tyrannus tyrannus* at Olancha - Saw a large flock of half grown Quails & a drove of 14 *Hesperophytus leucotis*. Saw 2 Cottontails & 2 Jack Rabbits. Shot a Coyote at Olancha with the rifle. hit it in the eye & spoiled its skull & it had no hair on half its body. Found it squeaking around among a drove of cattle on the meadow.

~~A warm~~ day. seemed to be a heavy shower on the mountains with some thunder.

June 30. Started at 6 A.M. lunched at Little Owen Lake reached Indian Wells at 6 P.M. & camped for the night. Aneroid read 3500 at Hayway at 6 A.M., 3350 at Rose Spr. at 7 A.M., 3000 at Little Owen Lake at 11 A.M., 2475 at lowest place on road in Indian Wells Valley at 3 P.M., 2700 at Indian Wells Station at 6 P.M.

Barometer corrected & set at Kuler before starting. In Indian Spring Valley we saw - Jack Rabbits, Cottontails, *Tamias leucurus*, and holes of *Dipodomys deserti* & *Thomomys* hills.

A hot day. road sandy & bad much of the way.

July 1 Left Indian Wells at 6 A.M., turned up a road to Walker Pass a mile north of Coyote Holes. Followed up it about 5 miles to the second spring and camped at 9 A.M. came about 9 miles, camped in the Yucca belt above Larrea.

Caught & made up some *Thomomys* & set a lot of traps in P.M.

Aneroid read at Indian Wells at 6 A.M. 2650, and at our camp at 9 A.M. 3925.

A clear day, rather warm.

Plants: *Larrea mexicana* is abundant and thrifty over Indian Wells Valley and extends up the slope of Walker Pass to 3800 feet, to where *Yucca brevifolia* begins, *Franseria dumosa* is abundant and ~~extends~~ ^{grows} with *Larrea*.

Mammals. *Thomomys* hills are common, *Tamias leucurus* is numerous. *Dipodomys deserti* holes were seen up to upper limit of *Larrea*-3800 ft. Watched for Bats in evening but saw none.

July 2: Dr. Fisher caught 2 *Thomomys* and 2 *Tamias leucurus*, 2 *Hesperomys* & a *Neotoma*. I caught 3 *Neotomas* a *Hesperomys*, a *Tamias* & a *Speotyto*. We made up a few skins and started at 9 o'clock.

Aneroid read 3850 at camp at 9 A.M. and 5100 on summit at 11 and 4400 at 12 M. where we camped on little stream on west slope.

A clear, warm day. Showers farther north on Mts.

The slope up to summit of Walkers Pass, faces S.E. is about a mile wide, rather smooth and even, the soil is loose gravel.

Plants: *Yucca brevifolia* begins at 3800 & extends over summit at 5100 but no higher. The main body stops at 4800.

Salicaria mixta extends up to 4000 ft., *Atriplex foliolosa* up to 4100, *Bigelovia (nodosa)* up to 4700, *Tetradymia glauca* up to 4800, *Ephedra (olivaes)* up to 4800.

Ambrosia inana begins at 4250 & goes up to 4800.

Artemisia tridentata begins at 4800 & goes over divide.

Ephedra (vorda) begins at 4800.

On the summit at 5100 are *Pinus monophylla* and *Percaria*.

~~Juniper~~ & *Ceanothus*

Mammals: *Tamias leucurus*, abundant over divide. Young of all sizes seen. 2 seen in top of a *Yucca* tree. 10 feet high.

Neotoma, Several caught at camp and nests seen all along.

Hesperomys leucopus, 2 taken at camp at 3900 ft.

Thomomys, abundant to top of divide.

Lepus californicus, abundant.

Lepus sylvaticus, common.

Taxidea, holes seen.

Canis latrans, tracks numerous.

Camped where we found the first water about 4 miles west of the divide, barometer read 4400 ft. Went up the little stream in P.M. & set traps & hunted. Followed up it to 5000 ft.

when it comes from base of high, rocky peaks south of the pass. It is a small stream of good water, flows down a rocky bed and dries up in the sand half a mile below where we camped. The dry bed continues on down to Cavebreak, where water comes out again, then dries up before reaching the wide valley where it joins the South Fork of Kern River. From the summit of Walber Pass down to Cavebreak the slope is nearly N.W. It is an open trough-like slope, rather uniform gravelly soil, grass & small vegetation mostly eaten off by sheep & cattle. Along the bottom of the valley sloping N.W. the two slopes bearing the extremes of plant. high and low zones, (N.E. & S.W.) meet and in places overlap. By taking the average limit of species in bottom of valley the limit on the N.W. slope can be determined with reasonable accuracy.

Aneroid read at summit at 11 A.M. 5100, at our camp at 12 M. 4400, at Cavebreak (July 3) 3900.

Plants on N.W. slope below summit.

Pinus monophylla. only at the summit and lower on N.E. slopes.

Pinus (sugarpine), extends from top of peaks down to 3700 ft. or lower on N.E. slopes. is not in the valley.

Juniperus, scarce. some grows at 4500.

Artemisia tridentata, comes down the valley on N.W. slope to 3900, down to 3000 on N.E.

July 3 Went to our traps, got some *Tamias*,
a big eared *Hesperomys*, a *Spermophilus*
gramurus and Dr. Fisher shot a *Sciurus fessor*.
Made up skins and in P. M. moved camp
down to Pruitt's ranch where the road strikes
S. Fork of Kern R.

Mammals: Walter Pass, West slope.

Vesperugo (No. 2983) one killed at 4400 feet.
seemed to be abundant along creek.

Vesperugo (No. 2984) 2 killed at 4400,
abundant along creek in evening.

Lynx; tracks common -

Canis latrans, tracks common.

Urocyon, a fox is said to be common
here. Saw tracks that looked like *Urocyon*.

Tamias, No. 2976 & others, Common
among oak & pines above 4500 feet.

Generally found on or near rocks, its
holes are among rocks & it depends on
them for safety. It climbs trees but if
surprised in a tree runs quickly to the
ground and to the nearest hole or rock pile.
It is shy and not easy to get near.
Keeps quiet through the middle of the day, but
is active and noisy in the morning & evening.
Its voice and habits resemble *Dorsalis*, a soft,
sharp chirrup; at times rapid & scolding.
It sits on a stone or branch & chirps & waves
its tail slowly from side to side. The young are
nearly full grown.

Tamias leucurus, common from Summit
down to Kern River.

Sciurus fessor, Dr. Fisher killed one at
about 4600 feet, among the Sugar Pines.

Thomomys, abundant from the
summit down to Kern River.

Hesperomys bigelovi, common among rocks
at 4600 feet.

Lepus sylvaticus, one seen at 4400-

Lepus californicus, common over the divide &
down west slope.

July 4, Did not get to camp in time last night to
set traps, so had nothing to begin on in morning.
Caught & made up 3 *Thomomys*, set a lot of traps,
killed & made up some birds, among them a pair of
Barn Owls. Shot a ~~*Vesperugo*~~ *Vesperugo* ~~*fuscus*~~
and 2 *V. hesperus*. A pleasant day. There is
plenty of shade & green plants to cover the ground
so it does not get so hot. The water of the river
is cold & nice, several soda water springs
come out along the river. It is fairly good
soda water.

July 5, Sunday, got an *arvicola*, a *Sorex*,
a Skunk, & a lot of *Hesperomys* - Dr. Fisher
caught a big shining *Perognathus* that
I never saw before.
A warm day but pleasant

July 6 Caught an *Arvicola* & a lot of *Hesperomys* of 2 species. Made up skins & reset my traps. Dr. Fisher shot 2 *Spermophiles* of the *gramurus* kind and an *Atalapha cinerea* & caught more *Hesperomys*. A pleasant day. The aneroids remain at 2750 feet

July 7, Cool enough to need a coat in morning & I forgot to take it off all day.

Dr. Fisher caught a Coon & a Skunk & a *Spermophile* & 2 *Neotomas* & 3 species of *Hesperomys*. I caught 13 *Hesperomys* of 2 species, one *Arvicola*, 2 *Sorex*. Shot a Badger & a *Spermophile* & a Rabbit. Shot the Badger on the run with my rifle & cut off both legs on one side. Killed a mess of young Quail about half grown. Set more traps. Catalogued 19 mammals today. Shot a *Vesperugo* in evening.

July 8, Got nothing new - worked late & forgot to write journal. Wrote up my report.

July 9, Dr. Fisher caught a *Urocyon*. I caught an *Ochetodon* & a *Dipodops*. Took up our traps and were going to leave but concluded to try one more night for *Lepus* and for more *Dipodops*. A cool day but windy. The wind blows up the valley nearly all the time.

July 10. We caught 3 *Dipodops* and nothing else.

Broke camp, started at 8:30, Aneroid read at Pinto ranch at 8:30 2650, at Seedy at 10 A.M. 2500, at bridge near junction of Kern Rivers 2350 at 4 P.M. at Kernville at 5 P.M. 2450.

Camped a mile below Kernville by river. Got our mail.

Could do nothing with plants. don't know the best species and most native plants have been crowded out of the valley. *Artemisia*, *Pinus coulteri*, junipers, & oaks come down on the rocky slopes to junction of the rivers. *Yucca brevifolia* stops just below Pinto at about 2650 feet. I do not know what marks the zone below *Yucca brevifolia* and it is an important one.

Mammals. Killed one of the long tailed *Tamias* on the rocks above near Seedy at 2550. ~~Saw another~~. Saw lots of *Tamias leucurus* all along the road. saw several *Lepus sylvaticus*, and lots of *Spermophilus beecheyi*. Dr. Fisher shot a *Vesperugo fuscus* at camp in evening.

Reptiles. *Cnemidophorus tessellatus* is abundant all along. Shot a large dark colored *Crotalus* in rocks near Kernville.

Cool & windy.

July 11. Started up the mountain at sunrise to
kill Chipmunks. Found them common
but very shy. I killed 3 and Dr. Fisher
6. We each killed a big *Hesperomys* and
a *Chamaea fasciata*, new to us both. Saw
a lot of *Phairophysa nitens* which seems strange.
Found them at 3000 feet among pines & oaks.
Saw & shot at a big Coon but it got into
a rock pile. *Spermophilus beecheyi* is abundant.
Saw several *Lynx* tracks, saw 4 Cottontails.
Caught a horned toad that spat blood
out of its eyes at me. It threw 4 or 5 streams
from both eyes in a few moments, would throw
a fine spray 15 to 20 inches, splashed my hand, and
clothes & gun all over with bright red blood. It
did it of its own accord when handled quite
carefully. Dr. Fisher saw it do the same
thing at camp 4 hours later and then when
he took one of his from a box it did the
same. I sent it to Dr. Steyerger with
an account of the strange freak, hoping
will understand it.

A cool, pleasant day but windy.

July 12 Sunday - not out of camp much.
A hot day & no wind.

Found a Mole's runway near camp and
Dr. Fisher set traps for it but did not catch
it. A boy told us that Kangaroo Rats were
common & we saw tracks of them in road.

Thomomys, *Spermophilus beecheyi*,
Skunks, Coon, & Lynxes are common
about Kernville. Saw one Jack Rabbit & lots
of Cottontails. Dr. Fisher killed a *Vesperugo*
fuscus & *V. hesperus*.

July 13 Packed up and started at half past
6. Barometer read at camp when we started
2300 (100 feet lower than before) at north bridge, 7 A.M.,
2250, lowest part of valley on road 2200, Top
of first Divide 3500 at 10 A.M. bottom of Havilah
Valley - 2800, Havilah town 2900, second summit
at 12 4100, Walker Basin where we camped
3200 at 5 P.M.

Shot 3 longtailed *Tamias*, saw a lot of them.
Shot 3 *Melanerpes formicivorus* in Walker Basin.

S. beecheyi abundant all along.

In evening we shot 2 *Antrozous fuscus* &
2 *Vesperugo fuscus*. Saw & shot at a Coyote.
Found lots of little holes that may be *Perognathus*
& may be beetles, no signs of *Dipodops*.

July 14, Caught 2 little *Perognathus*, nothing
else. I had a lot of skins to make up.
Dr. Fisher had but few, so he went up the mountain
started at 7 & got back at 12. went up to
5200 feet. Brought down cone & leaves of *Pinus*
ponderosa from 5000 feet on E. slope. Killed
a *Lepus californicus*, a *L. sylvaticus*, *S. beecheyi* and
a lot of birds.

I made skins all of forenoon, In P.M. hunted for *Dipodops* signs over fields and valley but could find none till I got into brush along old water course in middle of valley. Found tracks & holes there, but small tracks of probably a small *Dipodomys*. Set a lot of traps for them - 24, and 42 cyclones for *Perognathus*. Most of the *Perognathus* holes seem to be used (or perhaps made) by scorpions. *Neotoma* nests are common. Found one up a tree about 10 feet from the ground on a leaning tree 20 feet from the base. It is a big nest of sticks & is well made. Saw & shot a Coyote. Worked at specimens in evening till late. A hot day. Not much wind.

July 15, I caught 8 *Dipodops* and 4 *Perognathus* and a *Hesperomys*. Dr. Fisher got 3 *Dipodops* and 2 *Perognathus*. We made up skins and set traps.

July 16. Dr. Fisher got 4 *Dipodops* and 2 *Perognathus* & 5 *Hesperomys*. I got 3 *Dipodops* and 4 *Perognathus*. Made up skins and broke camp at 11 A.M. Barometer read 31 at camp at 11 A.M., 3050 in lowest part of Walker Basin, 3900 on highest pass on road to Babersfield, 800 at Pampa at 5 P.M. & 200 at Babersfield. Reached Babersfield at 11 P.M. Drove 34 miles - as it is called.

Were on oak, pine, & brush covered hills from edge of Walker Basin till we got down to 1700 feet on the S. slope where oaks, pine and brush stop. below that is bare, smooth hills and valley. Dipodops holes and tracks became abundant at 1700 feet and down to bottom of valley. none above. Spermophilus beecheyi abundant all along. No Tamias seen.

Near the top of the range crossed we saw a California Vulture, the first we either had seen. It was an immense bird, was sailing low over an old, dead, stinking cow. was nearly close enough for shot gun range.

July 17 We were sleepy after half a night's sleep but the horses had no feed, so we got out early and found a place where we could camp & get feed for the stock. Went to the P.O. & got word that Dr. C. H. Smith had started for Kanchatka.

Packed our alcoholics, wrote a few letters, got some supplies and then went about a mile W. of town across the river bridge and camped just beyond. Went out on the dry, smooth plain beyond the ranches & set 80 traps for Perognathus and Dipodops mostly. A hot day, said to be 105° in town. Saw lots of Crows. Shot an Atelapha ^{tuberosa} ~~tuberosa~~ in evening.

July 18, Caught 4 *Perognathus* and 6 *Dipodomys*
of a very small, slender kind. Dr. Fisher
shot a *Lepus californicus*.
Made up skins and set large traps along
river for Coon & Cats.
Packed all of the small skins that were dry and
a box of skulls.
A hot day.

July 19 Sunday, Dr. Fisher caught 2 *Dipodomys*
& a *Perognathus* and an *Onychomys*. None of my
large traps had been disturbed.

July 20 Neither of us caught anything in our traps.
I shot a *Scops* and a cat that came around
our bed in night. Dr. Fisher annexed a dog -
Packed up our things, took 2 boxes of skins
to post office & a large box to express office -
sent one box of skulls.
Started for Visalia at 10 A.M. - Camped
just before sundown about 6 miles N. of Poso.
Came about 26 miles - Set traps till dark.
Dipodomys and *Perognathus* holes are very
numerous till we reach Poso, *Dipodomys*
holes not seen beyond. No *Thomomys* hills
seen except one lot where we camped.
Lepus californicus is very numerous all
the way, their paths run in all directions.
We saw them sitting in the shade of

June fasts, small bushes, old houses, and counted 8 in the shade of a small R.R. bridge. They seemed to hate to leave the shade and would crouch down & let us pass close by without running. I killed one for a skin.

Spermophilus beecheyi is common all along near grain fields, but many holes seen far from fields. Parts of the plain are covered with mounds 2 to 4 feet high and 10 to 20 feet across, evidently the old burrows of this species. Their fresh holes are forming the same kind of mounds. Large piles of earth are thrown out of the same hole and finally become quite a hillock. Their holes are as large as Prairie Dog holes and more dirt is thrown out. Burrowing Owls are common at the old holes.

The country is bare & dry. Some grain is raised on the dry plain without irrigation.

A hot day, the ground seemed like a stove-top & a hot wind blew in our face.

July 21 Dr. Fisher got a *Perognathus* and I got one and a small, bright *Thomomys*.

Made up the few skins and started at 7 o'clock.

Traveled over level country all day, mostly smooth and covered with little dry plants.

In places all covered with mounds from *Spermophile* works. They are abundant over plains far from fields or any shelter.

Just before reaching Delano we cross a flat covered with *Suaeda* and Salt Grass. Cross several more during the day. They are old water ways but only a few feet lower than surrounding country. After passing Delano the country was not so much of a desert, probably because sheep had not chawed it off. There were more grain fields, houses and windmills stick up all over the plain. There are large grain fields and small orchards.

Thomomys hills became numerous after passing Delano, and Jack Rabbits very numerous.

Spermophiles were numerous all day - Saw no Cottontails. Thought I saw one little

Spermophile like *Mollis* but could not be sure, saw holes of some small thing.

A hot day, Rabbits, birds and everything sought shade. Jacks would hardly leave the shade of the fence as we passed along the road. Spermophiles all went into holes about 10 o'clock & no more seen till 4 or 5 P.M.

Camped at sundown on Elk Bayo, a small river, or large creek, 5 or 6 miles S. of Tulare. A lot of Bats went out from under the wagon-bridge on river, but we did not get a shot. *Dipodomys* holes & tracks were seen occasionally all day but were scarce.

July 22 Got up early enough to shoot bats before light. Found a lot flying around the bridge and going into holes between the joist. Waited till they were all in & then took bags and hooked wires and fished them out, got 44 *Vesperugo* and 6 *Nyctinomys*. Did not get half there were.

I caught a *Thomomys*.

Started at 8 A.M. Reached Visalia at 1 P.M. and found Palmer and Coville in camp a mile from Visalia. Talked over plans, packed specimens, and loaded our bats.

Shot 2 *Nyctinomys* and Dr. Fisher shot a *Vesperugo fuscus*.

A hot day. up to 99° at 2 P.M.

July 23. Packed specimens and hunted for a horse to buy for packer - very busy -

July 24 Packed more specimens, got our supplies and had the horses shod and got things ready to start in morning.

Wrote up my last report, a small one for Bakersfield & the valley.

July 25 Left Visalia at 8 A.M. with aneroid at 0 feet, 30 inches. Kept a general Easterly course ~~and~~ through thoaks (*Quercus lobata*) on level ground, grassy and clear under the trees and quite pretty. Small streams and ditches cut through the country so that it is well watered. We enter the foothills at Pagners store 20 miles east of Visalia, (aneroid 250) Here *Quercus* [*cerulea*?] and *Q. wislizenia* begin, and *Lobata* does not leave the flat ground along the stream, practically stops though a few straggle up the narrow river valley among the foot hills.

July 26. Left Three Rivers at 1 P.M. and followed up E. Fork of Kaweah River, Aneroid read 550 at 3 Rivers at P.M. 1350 at bridge where we cross the river 8 miles above, and 2250 where we camped 8 miles farther, on hill above river at ~~crack~~ ranch called Camp Flat. In scruboak country all the way, with thick brush of *Ceanothus* and *Fremontia* and *Arctostaphylos* & *Eseulus*. The road after crossing to N. side of River follows along the steep south face of the ridge, parallel with river. The river is a roaring little stream often not 30 feet wide tumbling over rocks in bottom of a deep, narrow canon of granite. The road is dug in side of mountain often 1000 feet above river.

July 27

Started early and traveled 9 miles up a steep grade in the same kind of country as yesterday except for lots of new plants and the loss of some lower species.

Camped at 8300 feet on S. slope 1000 feet above river at the first Redwoods - and pines, about 100 feet below the real S.W. slope lower edge of *Pinus ponderosa* & *P. lambertiana* & *Sequoia gigantea*.

Set traps & made a few skins.

Shot a *Tamias* & a *Hesperomys*.

July 28 Caught an *Arvicola*, a *Sorex* 3 *Hesperomys leucopus*, 1 *Hesperomys* with big ears, 1 *Thomomys*. Went down to river 1000 feet below camp along the little stream that we are camped on. Found one fall near the lower end of our little creek that was 100 feet high by aneroid. It came down in a shower of rain and struck a rock about 25 feet from bottom & fell into a basin below. The stream is about 4 feet wide & 6 inches deep where it runs over steep rocks.

There are 3 or more other nice falls on it from 25 to 50 feet high. The main river has low falls all along its rock bed in bottom of cañon.

2 Redwoods grow by our camp that are about 8 feet through & 175 to 200 feet high. A larger one stands just below in the gulch

and a little up the stream are 2 fallen across the creek that are about 9 and 12 feet through 10 feet from butts. Don't know how long they are the tops run over hill out of sight.

Saw a Bear track in the thick brush between camp & river. The brush is so thick on the slopes below first timber that we could hardly get through. mostly *Ceanothus* & *Arctostaphylos* & *Quercus breweri* and *Fremontia*.

Killed a Rattlesnake 45½ inches long.
Killed 4 *Hesperomys* *neotomae* in evening. A warm day, cold nights.

July 29 Caught only a big eared *Hesperomys*.
Shot a *Cervadelphus* & a *Sceloporus*.
Made up skins & wrote up notes in A.M. measured a *Sequoia* that had fallen down. It was 30½ feet around 20 feet from butt & 240 feet to end where it had broken off & was 14 inches through. They are a slow growing tree. one large one that had been sawed off averaged 12 annual rings to the inch.
Packed up & started up the road at 1 P.M. Aneroid read 5500 at camp on starting, 6100 at mill 3 miles beyond, went half a mile beyond mill & camped. Aneroid read 6200 at camp at 3 P.M.
Set traps & shot a *Tamias* different from the one below - No bats in evening.
A pleasant day, not too warm &

July 30 Caught 2 *Sorex*, an *Arvicola*, 4 *Hesperomys leucopus*; killed 6 *Tamias* of a kind just found in the pines, smaller & brighter than those below in oaks, and one Pine Squirrel. Shot some birds new to me. Made up skins & started on the road at 2 P.M. Aneroid read 6250 on starting & 7400 at Mineral King at 5 P.M. Camped in gulch $\frac{1}{4}$ mile above Mineral King & 50 feet higher. There are lots of campers all along the gulch. It is a pleasant place, cool & a splendid stream of cold water rushing by. Lots of snow a few hundred feet above & not far to timberline. Popples and willows grow along the stream & firs & Cedars & *Pinus murrayana*. We left *Pinus ponderosa* & struck *P. p. jeffreyi*; passed through *P. lambertiana* & *Sequoia gigantea* & *Libocedrus decurrens*. Will include zonal notes in my report & not duplicate them here. Shot an *Arctomys* & saw none. *Zonotrichia* & *Trochilus rufus* are abundant. Set traps along creek.

July 31 Caught a *Sorex*, an *Arvicola*, 5 *Hesperomys leucopus*, 4 *Tamias*, Saw a *Tamias laticaudus* & shot it but it got into a hole & was lost. Made up skins, hunted some, Did not set many traps. Watched for Bats in evening but saw none. A clear, pleasant day, 47° at 7 A.M. E. Fork of Kaweah River is about 20 feet wide & 18 in. deep at evening, about half as big in morning.

Aug. 1. Caught a *Sorex* + an *Arvicola* + some *Hesperomys*
Coville + I started up the mountain at 8 A.M.
on a continuation of the slope we followed up
from Visalia, the south face of a ridge sloping
down to the west along the north side of the
East Fork of Kaweah River. Followed up
the slope to about 500 feet above timberline.
The aneroid seemed to work pretty till near
timberline where it registered 9500 feet but only
went up to 9600 in going about 500 feet higher.
The timberline on S.W. slope ought to be higher
but it is a good timberline of serotany
Pinus balfouriana, *Abies magnifica* stops
400 feet lower down. Probably the barometer does
not register correctly so high. It is No. 164
of Gen. Survey. Took as full notes on plants,
especially trees + shrubs, as possible. The zones
were well marked and some of them came out
beautifully + ~~corresponded to~~ species of mammals
and birds fit in as they should. Found
plenty of *Arctomys* from camp up to highest
timberline, also the little *Tamias*, saw a few
Tamias laticaudatus but failed to get any.
Found *Lagomys* common above 9000 feet + got
3 specimens. Could find no signs of *Peromyscus*
or *Arvicola pallidus*. For the first time in
my life found *Bryanthus* in blossom, beautiful
red heads of it from timberline up, lots of
other flowers in blossom. I was never above

timberline so early in the season before.
It is just early summer up there. The 3 lagomys
all contained embryos. I reached a peak, or
crest of the range north of Mineral King when I
could look down onto the head of another stream
that I suppose is the head of main Kaweah River.
The peaks beyond are higher and very jagged &
sharp. Large masses of snow lie on north
slopes and extend down among the timber.
The south slopes are mostly bare, though small
bodies of snow come down nearly to timberline,
some below in gulches.

A cool day, 42° at 7 A.M.

Got down from the mts. at 5 P.M. & made up
8 skins. Found the new species of long-tailed
lizard up at 8300 feet. Killed one & saw 2
more.

Aug. 2 Sunday. Went for a ride up the trail &
saw a *Zapus* but did not catch it.

Aug. 3. Took a bag of traps in morning and
started up the stream south east of camp.
Took the right hand trail & went up
to a little lake to the west of Farwell Gap.
Found a nice place up there at edge of snow
& close to timberline. There is a flat grassy
meadow with big snow banks along the side
next the N.E. face of rocky peaks. A little
lake about 8 rods across & 4 or 5 feet deep in a

soft springy meadow of several acres, there are smooth grassy ridges & rocky cliffs and thick pine & spruce, & old windfalls of logs.

A splendid place to trap for everything living at that altitude. Did not take the barometer but guess it ~~was~~ ^{is} about 1000 feet above Mineral King. Found Marten tracks & set all of my steel traps for them. Found Arvicola runways & set traps for them. Set traps for Zapus. Killed 2 *Tamias lateralis* and 5 little *Tamias* of the minimus kind a species I never saw before & in a zone in which I never found any little *Tamias* before. It was only at the edge of timber close to snow. Most of them were on old logs near the stream. *Bryanthus* was common & in places where they were. *Tamias lateralis* was with them but none of the small pine chipmunks.

Shot a *Spermophilus beecheyi* halfway up to the lake. It was not half grown & is the first one I have seen in the Conifer Zone.

Got back to camp at 3:30 P.M. & made up 8 mammals skins.

A cool, clear day, very pleasant.

Aug 4. Went to traps + set 33 more, making 77 in all. Caught 11 *Arvicola*, 3 *Hesperomys leucopus*, shot a *Tamias lateralis* & 6 *T. minimus*. & some birds. Took barometer + got limits of all the plants I could. Got back to camp at 4 P.M. & worked at the specimens till late.

A nice day, cool & clear.

Aug. 5. Finished making up skins & wrote up some notes. Broke camp & after lunch started up the canon with our pack horses. Went up the creek about 2 miles, half way to Farewell Gap, & camped near the head of the E. Fork of Kaweah River, just 1000 feet above Mineral King and 8500 above Visalia by the aneroid. Camped in a bunch of *Abies magnifica* & just below *Pinus monticola* & *balfouriana*. There are several large beds of snow below us and lots of it above. It is but a short distance to timberline on N.E. slope.

Went to my traps, which were set out far from the new camp. Got a lot of *Arvicolas* & *Hesperomys* & 2 little *Sorex* & some *Tamias* of all 3 kinds. Did not get back in time to make up skins & it was cold after dark so I sat by the fire till bed time.

A cool, pleasant day -

42° in Mineral King in morning.

Aug. 6. Made up yesterday's skins, then went to traps. Did not catch anything new or very good. Took up my small traps and reset 41 of them for *Zapus*. Made up today's skins in afternoon & evening. Killed one young *Dendragapus* from a flock of 5 or 6. They were not half grown. 36° in morning & ice 2 in. thick in throats. Cold in morning & evening & not too warm all day.

Aug. 7. Coville & I started at 8 A.M., went around to the canon west of us & up past the White Chief Mine to the top of a ridge where his barometer read 10400 feet. Mine ~~did~~^{does} not go up above 10000 & did not work up to that. Followed up an E. & N.E. slope so we were above timberline from a little above 9000 feet. The timber (*Pinus balparian*) came up to the top of ridge at 10400 on S.W. side. We got a lot of good notes on high zone plants & animals. Found lots of new & interesting plants high up. Found *Leucostictes* common above timber on N.E. slope, also *Juncos* & a *Cinclus*, *Saffinetta* & *Sialia* - were common to top of ridge on S.W. Found *Tamias minimus* & *Lagomys* & *Arvicola* above timberline on N.E. There was a small & very deep lake in solid granite rock at 10000 on N.E. slope. It was mostly covered with old, thick ice. The open places were freezing over soon after the sun left it at 6 P.M. There were grassy

and mossy beds around the lake and along the little stream that ran into & out of it. Lagomys was common around it. On the other side of the ridge, there were a lot of small ponds at 10,000, rock basins with grassy banks covered with Bryanthus + Kalnia glauca, + Vaccinium + other alpine plants. Got some frogs & Tadpoles from one.

The peaks & high parts of the mountains look like bare, broken rocks with lots of snow but no life. They are full of life to the tops. Every bit of soil is covered with plants, & there are birds & mammals & insects. I got but few specimens, did not catch much in my traps, but got some good notes that will be of use. Reached camp at dark, saw 2 Bats near camp, quite large ones. Killed 3 Blue Grouse.

A cool clear day, very pleasant.

Aug. 8. Caught a Zapus & a Putorius, & some other things. made up skins, took up traps farthest off. Wrote some on my notes. A pleasant day.

Aug. 9. Sunday. There was nothing in my traps worth saving. Only Arvicola and Mesperones. Saw a lot of Bats in evening high up over the tree tops. could not reach them and do not know for certain what they were but think they were Vesprugo fuscus.

Aug. 10 Wrote a report all of forenoon.

Caught a *Lepus*, a *Sorex*, a *Tamias minimus* some *Arvicola* & *Peromyscus*.

Packed up and started at 1 P.M. Followed up the trail and over Farewell Gap and down Little Kern River to where the trail leaves it for Big Kern. Camped early and made up the things caught. Shot 3 *Vesperugo fuscus*.

They are numerous & seem to be the only bats. Saw a lot of Night Hawks. Took notes on trees down Little Kern River. It runs nearly S. & we followed down the east side so had a good S.W. slope, got some limits on the opposite N.E. slope. Found the lower zones pushed away up above those on Kaweah River. Should think we came 6 miles from Farewell Gap. Camped in *Pinus jeffreyi* & *Abies concolor*. My barometer read 9450 on summit of Gap, Coville's read 1375. It is said to be 11400 feet.

At camp tonight my aneroid reads 7100.

It is warm here, just pleasant. Little Kern is too big to jump across & is full of trout.

P.S. Learned that where we camped is called Lion Meadows.

Aug. 11
~~July 11~~ Left Little Kern River at 8 A.M. Followed its general direction but across ridges to the N.E. of it, and camped within a mile of it at Trout Meadows. Came about 18 miles. On reaching Trout Meadows learned that we could get no more feed till we reach a

meadow above Kern Lake, which is 12 miles over rough trail and could not make it before dark so camped at Trout Meadows for the night.

The route today has been over ridges covered mostly with *Pinus jeffreyi*. *Pinus murrayana* grew in meadows and damp places down nearly as low as trout meadows. *Abies concolor* gave out and *Libocedrus decurrens*. *Pinus ponderosa* began & is mixed through *P. jeffreyi*, and there are all the grades between.

At Little Kern at 8 A.M. the aneroid read 7050. At Trout Meadows 2 P.M. 6100. *Pinus lambertiana* began. Except along streams the country is dry & barren under the trees. Sheep have eaten everything clean and left a bare dusty surface. They have killed out many shrubs, some *Arctostaphylos purpurea* and *Ceanothus* still survive, but in places these have been killed. Wet meadows along streams still have grass and in some it is good feed.

The weather is warm here. Most plants seem to range higher. 2 species of *Sceloporus* are abundant and I killed a *Rattus* snake & a *Eutamias* at Trout Meadows.

Pinus jeffreyi seems to do well on the bare dry ridges and probably crowd out some other trees. *Abies concolor* evidently does not come down because too dry for it. *Libocedrus* may go lower.

Aug. 12, Packed up and left Trout Meadows at 7:30. Traveled north 4 miles to Kern River and then 4 miles up the river to the second Kern Lake, and camped above lake at Dick Runnels' ranch. Dick died last month but was a well known character in the mountains.

Averoid read at Trout Meadows on starting 6000 - on the highest ground crossed 6450, where we struck Kern River 5700, at first lake 6150, second lake nearly the same, at Dick's ranch where we camped 6300, on river.

The trail was good over smooth country among large pines till we reached the river. Thence it is rough and stony with several hard climbs of 200 or 300 feet up rocky banks.

Sheep have taken every green thing in their reach. have eaten the little pines and cedars. The ground is warty bare. On the whole the sheep are a good thing for the country as they prevent fires from destroying timber, but they make almost a desert of the country and make it very unpleasant traveling through it. Many of the birds and mammals are driven out for lack of cover and food. Those that live on trees and pine seeds only are not affected.

When we strike the river at 5700 feet may be near the lower limit of conifers. Pines *ponderosa* + *jeffreyi* and *P. lambertiana*, and

Libocedrus decurrens, *Quercus kelloggii* are common but the plants of the zone below crowd up into them. *Quercus chrysolepis*, *Garrya*, *Rhamnus californicus*, *Purshia*, *Alnus* *reticulata* *bifolia* are common along river and low down on sides of ridges. The river flows south, making a hot trough like valley with high rocky sides. There are conflicting influences. The cold stream carries some things down, the hot, shut in trough carries others up. *Pinus murrayana* & *Abies concolor* grow in wet places. *Artemisia tridentata* grows along the river, but it is in its zone.

The first lake we strike looks very deep, is about 30 rods wide and 50 long. Sedges and grass grow around part of it. It lies at one side of the river. There is a good little meadow by it. Willows grow along one side. The second lake is but a mile beyond. It seems to be shallow and dead popples stand over most of it. It is 30 to 40 rods wide and half a mile long. no marsh along the shores. The river flows through it. Dick's ranch consists of a little meadow fenced in so as to keep the grass from sheep and to furnish feed for horses of campers. The meadow is on a little stream at side of river. is a scant 20 acres. A warm day with some thunder clouds. Killed a *Sciurus* *pusillus*, & 7 Mountain Quail & a Mallard.

Aug. 13 Took a tramp up the river, found the country above here level along the river and large flats covered with thick timber and brush. Sheep have been over most of it but not on the islands. These are grown up to rank grass and weed and underbrush. Found Otter tracks and a small Bear track. Several Bears have been seen along the flat lately. Saw a Weasel but did not get a shot at it. Killed a Pine Squirrel and a *Bubo* and some birds. Shot 2 big trout. *Vesperugo fuscus* is common in evening.

Aug. 14. Coville and I hunted Bears all of forenoon, saw a lot of fresh tracks but no Bears. Shot a *Lepus*, Coville killed a Rattle Snake. They are common. 3 species of *Sceloporus* are common, a black one on rocks 8 inches long, one the size of *S. graciosus* & a little one. Set traps along river flats. The river is full of fine trout but they do not bite well. We have had about 3 good messes. Our men fish all of their spare time.

Aug. 15, Caught a lot of *Hesperomys leucopus*, some *Arvicolas* & a *Sorex* & a *Thomomys*. Set more traps. The days work don't seem to amount to much. Clear and pleasant.

Aug. 16 Sunday. Nothing in the traps worth saving. A pleasant day. Caught a snake.

Aug. 17, Caught a *Spilogale* and some more *Hesperomys*. Saw a fresh Bear track in the trail.

Packed up and started for Whitney Meadows at 8 A.M. Turned off from Kern River and followed up Whitney Creek, crossed it 6 times. Crossed one side stream on a natural bridge of stone, a water deposit of lime. Passed 3 volcano cones, a fine symmetrical red one & black one, and a little brownish one. The red cone is lowest down on Whitney Creek and a river of lava has flowed down the gulch 4 or 5 miles. The black cone is a mile farther north where the South Fork of Kern River and Whitney Creek come close together.

The Aneroids read 6200 when we started from Kern River at Dick's Ranch. At Whitney Meadows 9100 at 6 P.M. The distance is called 15 miles. It rained about half of the day we staid under trees awhile and took most of

the day to make the trip. *Pinus jeffreyi* was the characteristic pine up to 8400, *P. Murrayana* began to grow on dry soil at 7700 & is the characteristic tree above *P. jeffreyi* as high as we came. *Pinus balfouriana* and *Arctostaphylos* began at 8400 on rocky ridges. *P. ponderosa* ran out lower down. *Abies concolor* ran out down about 7700, I guess, where *Juniperus occidentalis* began. The country is dry and sheepland except little wet meadows along the creeks. Lots of little streams come in. There are some quite large meadows along Whitney creek below here. Whitney meadows are up nearly to timberline. are covered with short, thick grass. The sheep have not spoiled them yet. We camped on the west side of the meadow when the first little stream comes in. Couille went down along the little side stream & caught 26 Golden Trout in about an hour. A cold, rainy day.

Aug. 18, Couille and I went over to Denton's Camp. Couille returned and I staid all night. It rained and snowed half the day, cold, wet & nasty. Didn't see much game. Crossed the ridge close to timberline. Couille got mail. I did not. Staid to see Dutchess specimens and find out what he was doing & learn to read barometer.

Aug. 19, Started early for our camp, brought one of Dutcher's barometers with me & took several readings. Set traps all of P. M. Packed specimens in evening. A clear, cold day. Heavy frost in morning.

Aug. 20, Coville, Dutcher & I went up the high ridge at north end of Whitney Meadows, took mercurial barometer and read it at timberline on S.W. slope. Went about 800 feet above timber, did not see any *Lagomys* but found their dens, also found den of a Rabbit 500 feet above timberline! Found *Arctomys* tracks and saw *Tamias pictus* at 400 feet above timber. Shot some *Leucostictes* & other birds. Caught a lot of *Arvicola* of two species. Caught a *Hesperomys sonoriensis* & 2 *Tamias luteolus* & a *T. minimus* & 2 *Sciurus* & a fine *Arctomys* & a *Neotoma*. Set more traps up near timberline. Did not get back till after dark. Had nothing to eat all day & were very faint & tired. Sent our man to Lone Pine for supplies & wait. A frosty morning, clear & pleasant day.

Aug. 21 Worked on skins all of A.M. After noon went to my traps, got some *Arvicola* + a *Neosorex* + a *Sorex*. + some *Tamias*. Palmer came in evening. Clear + pleasant.

Aug. 22. Caught some *Arvicola* of both species, 2 *Tamias* ~~from~~ + a *Neosorex* and 2 *Thomomys*. Made up the skins + skins of yesterday's catch. Watched for bats in evening but saw none. Wasted a lot of time going over accounts with Palmer. Took up most of my traps. The country is so bare + sheep-baten that few animals can live on it.

Aug. 23, Sunday, unusually warm.

Aug. 24, Worked on my notes, cleaned gun, loaded my cartridges, packed specimens, then went hunting did not kill, or see any game but went over some new country.

Rained part of day, could not get at any 'good work'.

Aug. 25 Canille & I started for one of the high peaks near Mt. Whitney to get a good long slope above timberline. Took peak larger & was expected to be 2 or 3 days on the top. Crossed over the divide to head of Kern River & followed down it some 4 or 5 miles. Got in soft woods & windfalls & could make little headway.

Found it was a difficult route & the nearest peak a good way off so concluded to give up the top. Camped on Kern River near large patches of brush & weeds. Found signs of Neotoma, shot a *Lagomys* & a *Thomomys* *pulex*. *Sciurus californicus* & *Tamias amoenus* & *T. chrysolaus* & *Arctomys* are common. Found dung of some animal that eats *Lagomys*. Eat all of my traps and made 2 stone deadfalls.

Shot 4 *Dendroica*. Their crops contained Ripe *laevigata* berries, *Sambucus* berries, leaves of willow & *Ribes* & a seed pod of *Castilleja*.

A heavy shower passed just above us & did not rain much here, but it raised the water in Kern River nearly a foot in a very short time. A warm day before the rain.

Brought a aneroid barometer & took one reading at our camp.

Kern R. is about 20 feet wide here, shallow but very rapid.

Aug. 26, Did not get a *Nestora*, one spring a trap & left one whisker in it. Caught some long-tailed *Arvicola* & some *Hesperomys*.

Took another barometer reading at our night's camp on Kern R. & one on our way back at timberline north of Whitney meadows. It was at extreme upper timberline on S.W. slope, and should be the highest timberline in the mountains in this latitude. The broad, high mass at the center of the range seems to raise the zones. Can not tell how much yet as we have but aneroid readings to go by.

Found one *Tamias 4 vittatus* at about 3000 feet below timberline on S.W. slope. It is generally scarce above the level of Whitney meadows.

Reached camp at about 5 P.M.

A clear, pleasant day except for one little spatter of rain that came out of a small cloud.

Aug. 27, Started over to Palvers camp but met Dutcher on the trail with a letter from Palver & came back to camp. Waited till Wilson came after noon, did not do any work of any account.

Aug. 28 Coville & Furston packed up & started for Visalia enroute to Washington.

Nelson & Palmer & Inman at camp, & Stephens came in P. M. We are all waiting for word from C.H.M. Dutcher is down at Lone Pine waiting for mail or telegram.

Set a lot of traps baited for Weasel or any such animal. Found some Neotoma signs & Lagomys chrys. in rocks above camp.

Killed & made up a ♂ Loxia.

Aug. ~~30~~³⁰ Palmer, Dutcher, & I took our pack horses and started for Mt. Whitney. Stephens went a days trip ahead on the trail yesterday to wait for us & trap 2 nights on Kern River.

Found Stephens & camped with him in same place that Coville & I camped the 25th.

Dutcher & I set a few traps, mostly for Neotoma. Stephens had shot 3 Lagomys & a Tamias.

Nelson started for Kern Lakes today & McQuinn for Lone Pine. Dr. Fisher remains at Whitney meadows for a few days.

Aug. 31, Dutcher & I each caught a Neotoma. Packed up & started early. Followed down the branch of Kern R. about 3 miles, then turned up the ridge north of river, followed around a high point and up ~~the~~ parallel with the main Kern R. but about 1000 feet above it. Found the Whitney trail

where we crossed the first small creek that flows into the river. The trail is dim & often vanishes we could not follow it all the way but kept a northerly course, crossed several deep gulches & streams, It is a rough but not difficult route. Could not tell which peak was Whitney but follow to near the head of Kern River & picked out a high peak between the two upper branches. Camped at its base a hundred feet or so below timberline on a S.W. slope. A large creek runs down through meadows below us, great peaks rise all along to the east & north and a high, snowy range runs along the west side of Kern River opposite us. My aneroid read at camp at Whitney Meadows 8275, at last night's camp 8400, here in evening 10200, at the highest timberline on S.W. slope 10700.

Pinus balfouriana is the most common pine here & all along high up. *P. murryana* is common & goes to 100 feet of timberline. *P. jeffreyi* & *funiformis occidentalis* run up onto the slope along the branch we camped on last night to about 1500 feet below timberline. A few trees of *Pinus flexilis* were scattered over the same slope - a steep, dry, hot S. slope. *Pinus albicaulis* was common on one side of a mountain from timberline down at least 700 feet. It is the first I have seen on the Sierra. Sheep have grazed the whole country almost bare.

Sept. 1 Started up a high peak that we thought was Mt. Whitney but found it was not near so high as others around. Went up 1600 feet above camp + 1300 feet above timberline on S.W. slope. Took a barometer reading at highest timberline + one on the peak we went to. Found a lot of plants ranging high above timberline + some that I have not seen before. Collected a bunch of plants + Palmer got some butterflies. We heard Lagonys 1300 feet above timber + saw a *Parus gambeli* + a Golden Eagle + a large hawk, a Sparrowhawk + a lot of *Penecastrius* at the same place. Lots of plants range higher than we went. Found a beautiful *Primula* + an *Artemisia* both new to me.

Came back to camp, packed up and started back on our trail for a mountain that looked like Whitney some ^(4 or 5) miles to the east of us.

Crossed a ridge + around + up another cañon south of us. Rode to above timberline and camped in the last trees near base of a peak that looks some like Whitney. It is a high, jagged peak + a deep clear lake half a mile long + half as wide lies at its base on the west a good creek flows from the lake + goes down a steep cañon with lots of little falls. The lakes all look deep green. There are lots of them all around above timberline, mostly small + often very deep. There were 5 ducks in one, looked like Widgeons, One Grebe in the lake by peak.

The Bats came around our fire in evening but I failed to hit one. Some of them were the size of *Vesperugo fuscus*.

From the base of the peak that we now suppose to be Whitney glaciers have worn smooth all of the red rock & sides of the cañon sloping west. The solid granite from west edge of the lake down to the timber half a mile below is polished as smooth as glass & scratched in long grooves. Parts of the surface are chipped & broken & rough from weathering. The sides of the cañon are worn smooth & rounded to 100 feet or more above the bottom. The polishing & scratching looks fresh but is probably very old.

Sheep have eaten the country all clean, the horses can get but poor feed.

There are no fish in any of the streams up here probably cannot get over some falls in Kern River.

Sept. 2, Started up a peak in morning that Palmer thought was Whitney. It was very steep & rough & dangerous climbing, I got sick of it & went back & up a slope opposite that had plants on, went up till I could look down on top of Palmers Whitney, to ~~the~~ where my aneroid read 12300 ft or 1800 feet above S.W. timberline.

Ran out the limits of a lot of plants on N.W. slope & found *Oreomyza* dwarf & thickets at 12200, Found *Hesperomys* dwarf at 11500 - 1000 feet above timber. Went up to where plant life was almost absent. A few composite flowerlike *Helianthus* & a *Luzula* grew on top of a ridge at 12300, A blue *Hydrophyllum* ran up to 100 feet lower.

Found a lake about half a mile across at 11900. It seemed very deep, was half covered with old, thick ice. Another smaller lake a little higher was covered over with old ice, just a crack around the ridges & a hole in one side. The water looked bright indigo blue. It is very clear. The sky is a deep blue. Arcturys had been up on a rocky slope 500 feet above where any plant that they eat grows. They are common at 11700 where Carex & 2 or 3 small grasses grow.

We came back to camp & concluded to give up finding Whitney, packed up & came back to a meadow on the 3d creek after leaving Whitney meadows.

Sep. 3 Grub most gone & Mt. Whitney not to be found, we concluded to give it up & not waste any more time. Started for Camp of Whitney meadows at 7 A.M. reached there at 11 P.M. Made up our few specimens, went over some accounts. After supper Palmer & I caught a mess of trout.

Sep. 4 2 of the horses were gone & Charley did not find them till afternoon so we can not start for Mineral King today. Packed a box of specimens, wrote up some notes, skinned a big Woodchuck.

Sep. 5 Packed up & left Whitney Meadows at 8 A.M. reached Dickes Ranch on Kern R. at 3 P.M. Camped at the ranch, took a barometer reading & set cat traps. Read barometer 200 feet above Natural Bridge on Whitney Creek & at Dickes. Will correct up my aneroid readings between when I get mercurial readings reduced.

Sep. 6 Did not get anything in my traps, Nelson caught 2 Bear, a black cub & an adult brown Bear. The cub was in a trap baited with a skinned sheep. It had in its stomach about half of the foot that was caught in the trap, one toenail & several toefads, the bones & hide of the foot, a dishrag that it had probably picked up at some camp, a lot of dirt & gravel & a few seeds of *Rhamnus californica*. The old Brown Bear had had in her stomach a lot of wild clover, bait from the trap & most of the foot that was in the trap.

Spermophiles are numerous along the river & seem to be browner on the bank than those in the valley - *Tamias 4. vittatus* is abundant & seems to be the only species. The big tailed one has not been found here.

Sep. 7 Dr. Fisher & I packed up & started for Mineral King at 7:30 A.M. Took up our traps on the way. Dr. Fisher got a *Spilogale* & I got a *Spermophilus*. Just below the lakes on a ridge I shot a big-tailed *Tamias* same as we get about Kernville, saw several more. They overlap with *T. 4 vittatus* same as the oaks do with the pines (*P. ponderosa*) and about as far. The cañon carries oaks & *Tamias* up the river & at the same time carries pines down. Traveled south 12 miles to Trout meadows where we lunched & read mercurial barometer. Then bore west & a little north for about 10 or 12 miles & camped at Lion Meadows. Kept nearly on the same level all day, between 5050 & 6000 feet by the aneroid. The general slope is south. Dr. Fisher killed 2 *Sciurus fuscus* & I killed one. They live in high trees & are hard to get. Skinned things in evening & set one Fox trap. Good feed at Lion Meadows. The sheep have been kept off of one end of the meadow.

Sep. 8 Left Lion Meadows at 7 A.M., traveled all day without unpacking. Followed up Little Kern R. through Farewell Bend, through Mineral King and over the ridge north to head of Middle Fork of Kaweah R. Camped 1550 feet above Mineral King and but a few hundred feet below timberline.

Can hear Lagomys bleat close to our camp.
in the upper end of Cliff Cañon.

Rained hard for half an hour or so + wet us through
with ice cold water, then drizzled a good deal
of the rest of the afternoon.

Took a mercurial reading in Farewell Gap.

Sep. 9 Carried barometer up + took a reading at
highest timberline on S.W. Shot 6 Lagomys and
Dr. Fisher shot 6. He shot 2 *Tamias borealis*? +
a *Sciurus Californicus*. Skinned specimens till
4 P.M., then began setting traps. I set 47 on
side hill for *Phævoecampus* + 5 steel traps for
fox or cat or marten.

Shot a Long-eared Owl in evening.

Made up skins in evening.

A warm, pleasant day.

Sep. 10 Caught 10 *Onychomys* with long tails, + 2
Hesperomys + one *Sorex*. Tried to go
around into the next cañon north of us but
found it too deep + steep to get into safely.
Hunted + set a few more traps, a poor
days work. The place don't seem to turn
out well.

A cool day.

Dr. Fisher killed a woodchuck + 3 Lagomys.

Sep. 11- We got a few more *Lagaves*, I caught a *Nestor* & a *Sorex* besides *Arvicola* & *Hesperomys*. Dr. Fisher caught a small dark colored *Thomomys*.

Went above timberline & took a barometer reading and leveled across to timberline in several places on the opposite slope. Found the difference between S.W. & N.E. timberline to be 500 feet. Both taken on rounded slopes of about the same angle (29°) and of same general characters.

Made up skins & in P.M. packed & came down to Mineral King & camped. Set *Thomomys* traps & shot one *Neotomus*, saw hundreds, but they flew too high to reach and soon disappeared from the cañon.

Sep. 12 Our horses went back to one of our old camp grounds a mile or two above Mineral King & Charley did not find them till nearly noon. Did not get started till half past eleven. Reached Kane Flat at dark & camped. Could get no feed for horses. Took a barometer reading at lower edge of *Conifers* on S.W. slope. Was able to get the upper limits of several species that I did not get exactly going up.

Dr. Fisher caught 2 *Thomomys* & an *Arvicola* at Mineral King in morning & made them up. I had but few traps out & only got a *Tamias*.

Camped too late to set traps or even shoot bats.

Sep. 13, Sunday - Started early & came down to
Three Rivers & camped at noon. Got some
notes on plateau ranges. Saw a big Tailed *Tamias*
down at lower edge of chaparral.

Sep. 14/15, Set traps most of the day.
Dr. Fisher caught a *Spilogale*.

Sep. 15, Caught a big *Perognathus* & a little one,
3 *Thomomys*, 2 species of *Hesperomys*.

Dr. Fisher caught a big *Perognathus* & some *Hesperomys*
& 2 *Neotomas*, & a *Spilogale* and a *Bassaris*.
I had more traps out than he did but he got
all the game.

Rained so in P.M. that we did not get
our traps well baited & will not catch much
tonight. Rained from 4 P.M. till late
in evening.

Sep. 16 Caught a *Perognathus* & 2 *Hesperomys*
& a *Thomomys*. Dr. Fisher got 2 *Spilogale*
& 2 *Perognathus*. Made up skins & set traps.
Palmer & Nelson came about 5 P.M.

Rained a little after noon, then cleared up.
Palmer says it snowed in the mountains yesterday.

Sep. 17 Caught a *Myiarchus* & 2 *Perognathus*
& a *Neotoma* & some *Hesperomys*.
Dr. Fisher got 2 *Perognathus* & a *Crow*.
Packed up & started at 9 P.M. for Thibetia
& reached there at sundown. Camped a
mile out of town to get things ready
for breaking up camp life.
The peaks of the Sierra Nevada are shining
white down to timberline.
Warm in the valley.

Sep. 18 Don't know what I did do, but
kept so busy I did not have time to write.
Dr. Fisher & Nelson left for San Francisco.

Sep. 19 Got rid of our extra stuff &
sent off a lot of specimens &
Palmer left on the 5 P.M. train. I
got things ready for a start in the
morning for Fresno.

Sep. 20 Went to Fresno and staid at
a hotel the rest of day.

Sep. 21 Compared my mercurial barometer
with that of the Signal officer, then packed
& shipped it back to Keller. Got a team
to take me out into the country to find a
place to stay & trap for *Perognathus*. Could not
find any very good place for *Perognathus* except
on a hill near town, so came back to the hotel & stayed.

Sep. 22 Went out past the Hospital, 3 miles east of town and set traps on some high, sandy ground, an old field abandoned because too high to get water on. Set 30 traps & then came back because it was raining & there was little use in setting traps. In P.M. it cleared up, & I went out 3 miles west of town to some sand ridges by the R.R. Set 30 traps here. Found lots of holes of a little *Dipodomys*. Killed a Jack Rabbit that was very pale colored. Watched for bats in evening at a slough just out of town but saw none. Awakened a *Speotyto* as I came back after dark.

Sep. 23 Caught 2 *Perognathus inornatus* in the old field east of town and 5 *Dipodomys* on the ridge west. Set all of the traps in the *Perognathus* field & made up skins. An unusually warm day.

Sep. 24 Caught 6 *Perognathus*, one of them is the little one we have been catching all along. The others are *inornatus* I suppose. Set some *Thomomys* traps & made up skins. Hunted for snakes but only saw a *Eutamias*.

Sep. 25 Caught 5 *Perognathus* and a *Thomomys*. Made up skins and packed a box of specimens and wrote a little report & packed up to start for Monterey via San Francisco.

Sep. 26. Left Fresno at 8 A.M. and reached San Francisco at 12. Went to the California House & found that Dr. Fisher had gone and Nelson was away. Went out to the Seal Rocks & through Golden Gate Park and around town.

Sep. 27 Sunday. Nelson came back & we went out to the flocks and down to the wharfs.

Sep. 28 Started for Monterey at 8:30 A.M. & reached there at 1 P.M. Took lunch at the Del Monte. Mr. Shoreward is gone but the man in charge knew all about the arrangements & said for me to go ahead & collect. Spent some time in trying to find a place to locate, but finally settled at a private house in the west edge of Pacific Grove about 3 miles east of Monterey. It is in thick pines and near the beach. Could not get my trunk to the house tonight.

Sep. 29 Got my trunk & chest as soon as I could. Found the specimens in the chest all shook loose & badly jammed. Fixed them down as well as possible. Took a bag of traps and tramped around in the woods & along the beach. Set 71 traps. Found lots of good places for something. *Hesperomys* or *Arvicola* I don't know which. *Thomomys* is abundant. Found some *Neotoma* houses. Caught a *Lepus* *trawidgi* in a *Neotoma* trap. Saw a *Lepus Californicus*. Saw Coon & Lynx tracks.

A cool day with considerable wind. The waves rolled in big & white capped & threw lots of strange plants up on shore.

There was a regular storm of sand along the beach where it is sandy.

Caught a *Eumeces* & a little *Scaligeria* & a little *Hyla*. Made up the Rabbit skin in evening and put in about 12 species of plants.

Sep. 30 Caught 19 *Arvicolas*, 14 *Hesperomys* or 2 or 3 species, 6 *Onychomys*, 3 *Eorex* of 2 species, 3 *Thomomys* & 2 *Neotomas*. Some were damaged but I saved 37 of them. Skinned them all & made up 3 in P.M. Reset the traps and set some more for Coons & Cats.

Oct. 1 Caught a Skunk, a Coon, 3 *Hesperomys californicus*, 5 *Arvicolas* 5 *Ochetodons*, 2 *Sorex* 2 *Thomomys*, 1 *Spermophile*. Saved 20 of them... & 2 fays. Skinned them all & stuffed about 30. Kipt pretty busy.

Oct. 2, Did not catch anything new. Got a Skunk & some mice & gophers. The skunk swelled too much to save anything but the skull. Saved 10 specimens. Skinned these and made them & the others of yesterday's catch up. Have caught up with my work now and can reset my traps better. Saw a Coyote & 4 Deer. Set some Scalops traps. Killed a Hummer. A very pleasant day.

Oct. 3 Did not catch much. one small Coon & a few mice. Killed some birds & collected a few plants to get identified.

Oct. 10 Have been very busy and neglected my journal. Started from Pacific Grove at 5:45 A.M. Changed cars 3 times, at Pajaro, Santa Cruz, & Felton, reached Boulder Creek at noon but my trunk did not get in till 7 P.M. so I could not do much. Collected some plants. Boulder Creek is in the big hills about 20 miles N.W. of Santa Cruz, there is heavy timber all around, *Sequoia sempervirens*, *P. douglasii*, *Pinus ponderosa* & *P. tuberculata*, 4 oaks and a Manzanita tree. The underbrush is thick and big. It is a kind of country I was never in before. The southern end of the Pacific Coast timber belt.

Oct. 11. Sunday. Tramped around some and saw quite a lot of the country.

Oct. 12. Killed 2 *Sciurus nigripes* & some *Tamias*, & birds. Set 54 traps. made up the skins. also killed a Rabbit. Watched for Bats & shot at one but did not get it. Saw 2 kinds, one a large bat like *Vesperugo* & a small one in the trees that may be *A. tibialis*.

Oct. 13. Caught a *Neotoma*, a *Hesperomys Californicus* + 2 big eared *Hesperomys*, a *Sorex*, a *Urocyon*, a *Tamias*, tramped over some of the highest hills and through thick brush. Found a lot of plants that range below conifers on west slope of Sierra Nevada, such as *Adiantum fasciculata*, *Arctostaphylos* + *Ceanothus*, *Herba Santa*, *Saks* & other plants. Set a dozen more Chinax traps. Caught a house cat. Saw a Squirrel but could not kill it ⁱⁿ the top of a Redwood.

Oct. 14 Caught a *Spilogale* + 3 *Hesperomys* Cal. + 3 smaller *Hesperomys*, + 2 *Sorex* + killed a *Tamias* + a *Sciurus nigripes*.

Got a *Urocyon* skin. It had been caught and kept a few days + then killed yesterday. Caught another *Felis domesticus*.

Set my traps out on a new time.

Worked late and guess I can get off tomorrow -

Have got a nice smell in my room. Have a *Spilogale* + *Urocyon* skins and got a bottle of German Cologne. The three make a great combination.

Cheer and warm.

Oct. 15 Caught 2 *Sorex* + 3 *Arvicolas* + 3 *Onychomys*, a *Hesperomys cal.* + 3 others and shot 2 *Tamias*. Caught another cat. Took up traps and skinned the things + packed up. Sent some specimens by mail. Left Boulder Creek at 2 P.M. changed cars at Felton and had to wait over at San Jose till tomorrow for train to Lodi. Wrote my report and letters at San Jose in evening.

Laurel Dale, about halfway from Felton to San Jose is a good place in heavy Redwood timber and near the summit of the range.

Oct. 14 Left San Jose at 8:15 A.M. and reached Lodi at 2 P.M. Got my trunk to hotel at once and started out to set traps. Tramped around the fields and along R.R. but could find no good place for trapping. The country is flat and the ground like a brick. None of the soft ground lovers will live here. *Spermophilus beecheyi* is common and there are a few *Hesperomys*. Set 26 traps at some holes along R.R. bank and may get a little *Perognathus*. If there is nothing to be caught I will not stay long.

Raining in evening at San Jose, but cleared up before noon.

Oct. 17 Caught 3 *Perognathus*. Took up my line of traps and went the other way, cut north of town by river. Found sandy flats but covered with brush & no signs of animals I want. Took another long trapline in P.M. but could not find a place to set a trap. Came back & packed up and left Losi at 5 P.M., reached Sacramento in evening.

Oct. 18 Sunday, Staid at Sacramento.

Oct. 19 Took the first train for Auburn. Got settled & tramped over quite a lot of country, set some traps but did not find any good places. Shot a Skunk & shot off some bats. The place promises little. A hard, red clay & stony soil is not good for *Dipodomys* or any animals of the family.

Oct. 20 Caught 4 *Hesperomys* & killed a Cottontail. Found some *Arvicola* runways & set traps for them. Killed a *Nyctinomys*.

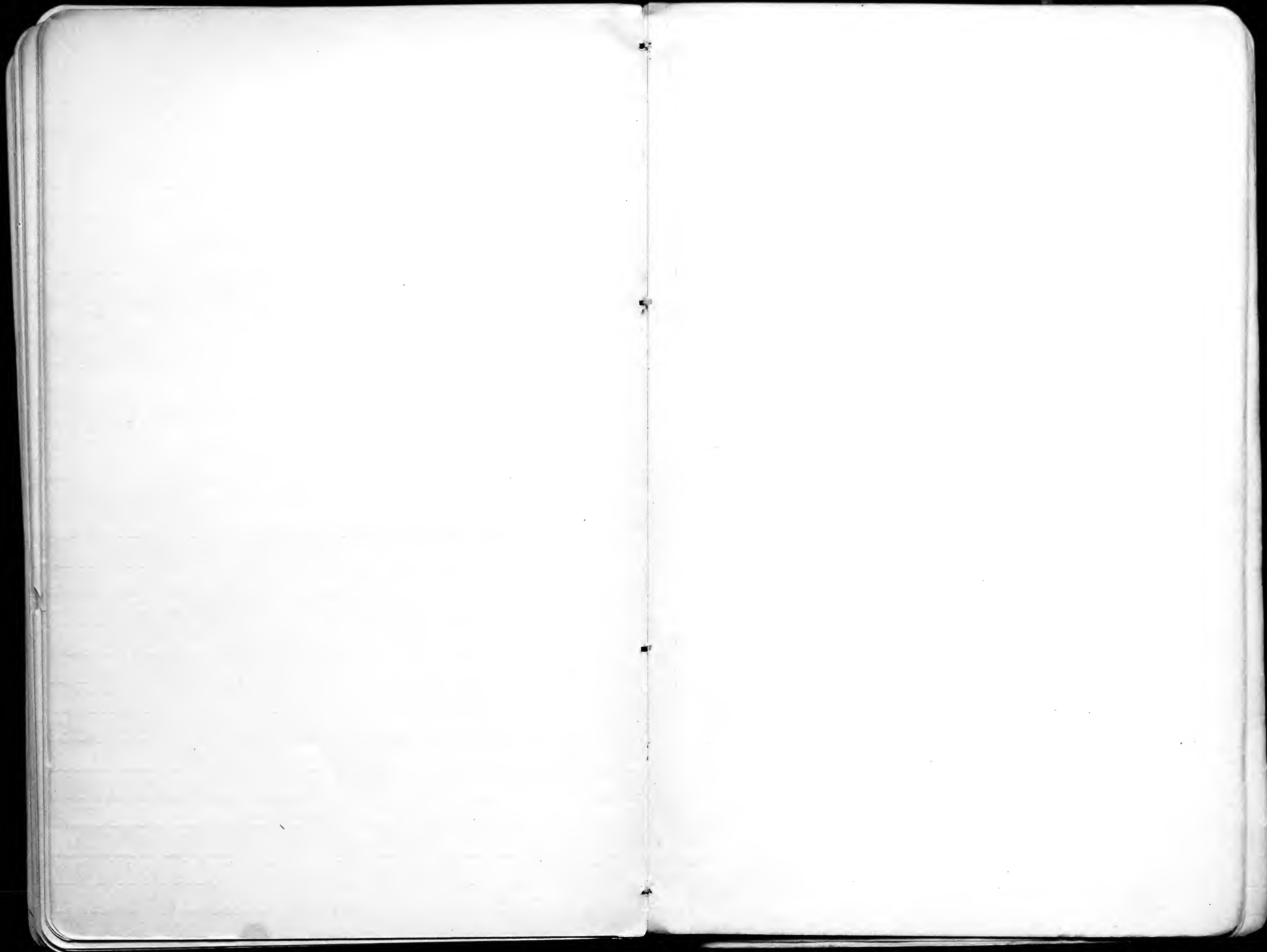
Oct. 21 Caught a *Spilogale* & a *Mephitis*, & 2 *Hesperomys boylii* & an *Arvicola townsendi* & 3 *Mus musculus*. Shot a *Lepus californicus*. Made up skins and reset my traps.

Oct. 22 Caught 4 *Arvicolas*, nothing else.

Killed 2 *Coccothraustes*,

In P. M. Took a horse and went over
on south side of Middle Fork of
American River and set 40 traps for
Hesperomys.

Packed up some specimens in evening.



Down Whitney Creek, Sep. 5 S. slope

(Anemoid at Whitney Meadows ⁹¹⁰⁰8800), (No. 12, ^{above Natural Bridge}7300) (Dicks No. 13, ⁶³⁵⁰5600)
8076

- Artisia rathrocki*, Whitney meadows and down to 7600
 " *tridentata*, up to 8200 steep S. slope with junipers &c.
Pinus jeffersoniana, timberline down to 9000 ^{can.} Carried down on rocky ridges
 to 8200, a few on lava rocks to 7600.
Pinus murrayana, on dry ground & ridges from 9200 S. down to 7300 S.
 in basins & gulches along streams from 9600 down to 5000
 a few to 100 feet of timberline.
Pinus jefferyi from 8200 on steep slope down to below 5475 with *pouderosa*.
Pinus lambertiana, 6900 down to
P. ponderosa 7100 down to, grades into *jefferyi* & is
 hard to separate.
Juniperus occidentalis, from 8200 steep S. slope to 7100.
Libocedrus decurrens, 6600 down to
Arctostaphylos purpurea, up to 8200 steep rocky slope.
Ceanothus chrysophylla, " "
Spiraea dumosa, " "
Ceanothus [decurrens] up to 7100,
Coreocarpus luteolus, up to 7000,
Abies concolor 7000, down to
Populus trichocarpa up to 6800, by creek.
Quercus chrysolepis up to 6200 in cañon.
 " *kelloggii* up to 5650 in cañon.
Rhamnus californica, to 5700 in cañon.
Alnus rhombifolia up to 5450 in cañon
Garrea up to 5600 " "
Sambucus from lowest valley to timberline, probably several species.

Corrected

<u>Lower limit</u>	<u>Upper limit</u>
8376 to	
	- 9100
9900	- 11664
9100	-
8900	-
8076	- 10100
5860	- 10500
	11500
6225	- 9100
	- 7676
	- 7876
7876	- 9100
	7350
	9100
	9100
	9100
	7876
	7776
	7776
	7576
	6950
	6400
	6450
	6200
	6350

21/2 N.W. side of Mt. Whitney.
~~Up Peak near Whitney by 3 big lakes~~ Sep. 4, 2

Corrected

- S.W. timberline, P. balfouriana 10500 (same as No. 10) 11875
 Sedum obtusatum at 10800 W.
 " rhodiola? 10500 to 11000 W.
 Henschia rubescens at 11300 W. on cliff
 III Hydrophyllum [erubescens] 11300 W. to 12200 N.W.
 Oenothera dygiva up to 11300 W.
 X Juncus gardneri timberline up to 11700 W.
 Eriogonum (caespitosum) up to 11500 W.
 VIII Erigeron (dissecta) to 11500 W.
 VII Helium hoopesii? from about 10000 to 12300 N.W.
 XI Luzula , to 12300 N.W.
 Mosses + lichens com. at 12500 N.W.
 XII Sparganium to 11900 N.W.
 " Saliginella to 11900 N.W.
 " Phlox to 11900 N.W.
 IX Agrostis? to 11900 N.W.
 IX Carex , 11900 "
 IX 2 little grasses to 11850 "
 VIII Calandrella 11850 "
 " Drosera to 11850 "
 X Pigon Grass to 11700 "
 Mimulus " 11600 "
 V Primula at 11300 W.
 III Begonia
 VII Erigeron

Mercurial Bar. corrected } Timberline 11315

11375
 11675
 117375 to 11875
 12175
 12175 - 13075
 12175
 11375 - 12575
 12375
 12375
 10875 - 13175
 13175
 13175
 12775
 12775
 12775
 12775
 12775
 12775
 12725
 12725
 12725
 12575
 12475
 12175

Lagomys Peak at head of Kern R. W. of Whitney Sep. 1.

Timberline S.W. slope Lagomys Peak. (No. 10) aneroid 10500

Pinus albiculis to 10550, dead trees to 10400

" *balfouriana* to 10450 S.W.

" *lambertiana* to 10400 S.W.

II *Ribes cereum*, up to 11700 S.W. down to 9200 S.W.

" *laevis* up to 10600 S.W.

I *Artemisia* (new) 11200 to 11700 S.W.

Primula suffrutescens 11400 to 11700 S.W.

" (new) at 10650 S. at 11300 W. on another peak.

Pentstemon wongii to 11800 S.W. & higher

Hydrophyllum (blue) 11700 to 11800 + about S.W. (on Lagomys Peak 13050)

Lewisia gordonii

Spraguea

Callindrella

} up to 11000 S.W.

Oxaria dygiva timberline to 11300 another peak

Mercurial corrected { Timberline 11376
Peak 13056

Corrected readings

11376

11425

dead trees - 11475

11325

11275

10075 - 12956

11475

12075 - 12950

12460 - 12950

11525 - 12500

- 13050

12950 - 13050

- 12000

11375 - 12550

Mt. Whitney + Whitney Meadows

- Pinus balfouriana* On rocky rocky ridges down to 1200 below timberline. timberline down to 1000 bet S. Cam. a few below. On lava to 2000 below.
 " *murrayana* to 100 ft. - timberline, scarce, com. up to 900 + timberline S. on slope.
 " *flexilis*, ? some at 200 + no f = S.
 " *abietalis*, on lava at 2300 + no f at timberline down to 700 feet lower.
 " *lambertiana*
 " *povdensa piffeyi* up to 600 + (no f) S. } steep side of from R. Cañon
Juniperus occidentalis up to 600 + (no f) S. }
Abies magnifica
 " *concolor*
Libocedrus decurrens
Populus tremuloides at 150 - (no f) fork of Kern R.
 " *trichocarpa* 150 - (no f) " "
Quercus chrysolepis
 " "
Castanopsis chrysophylla up to 600 + (no f) S. }
Crataegus (maerica) " " " S. }
Arctostaphylos pungens " " " S. } steep side of Kern R. Cañon.
Artemisia tridentata " " " S. }
Ribes cereum at " " S. }
Ledum glandulosum down to (no f) N. mt, cold slope.

Corrected readings

9566
 10966 - 11666
 - 9966
 - 9966

9500
 9500

9966

9350

Aneroid readings to correct

June 18. Wild Rose 4550 8 A.M. Divide 8500 at 11 A.M.

June 22 Furnace Creek 4 A.M. 30:50, Salt Flat 7 A.M. 30.65

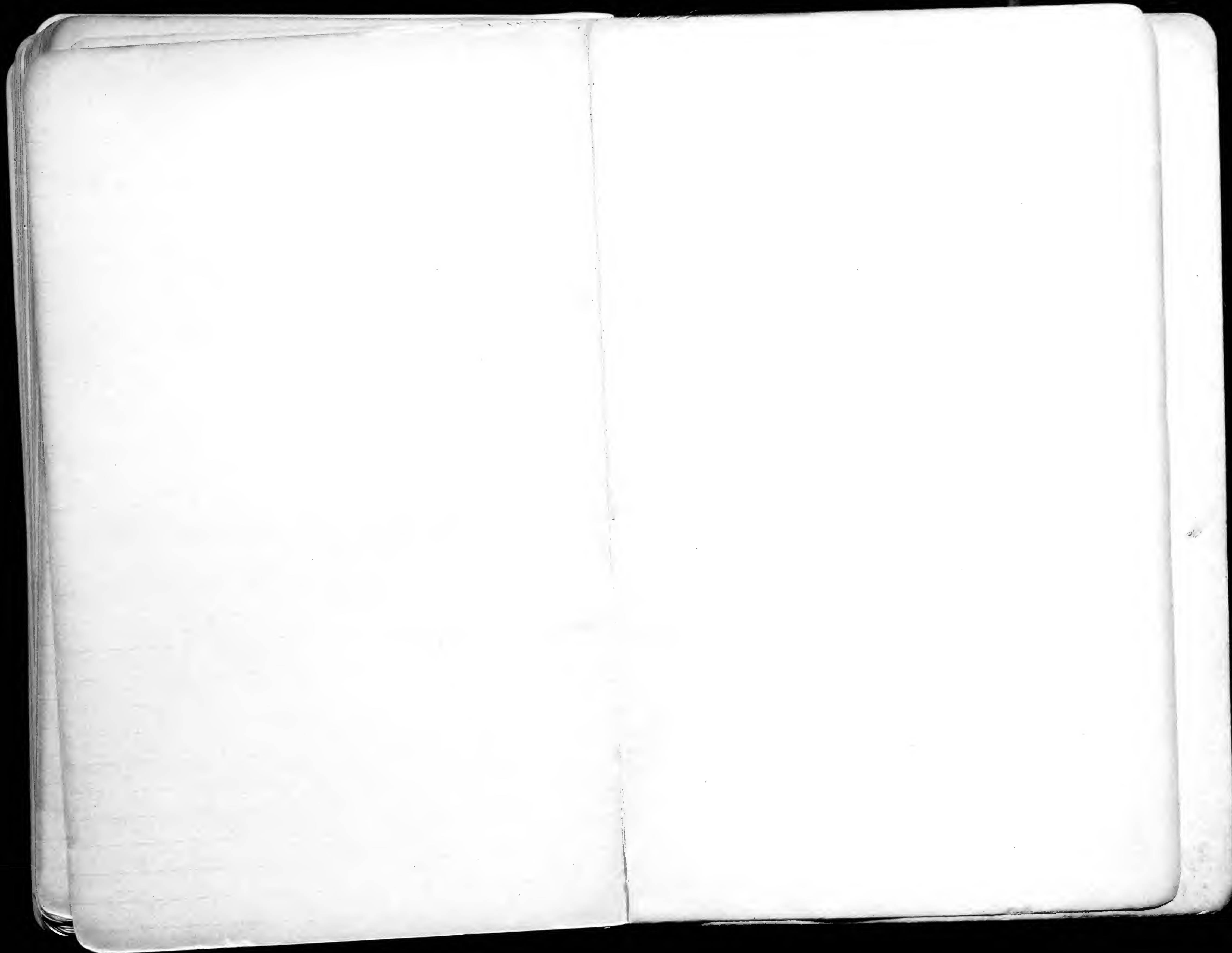
End of Death Valley Cañon 9:45 A.M. 1100, 11 A.M. 2300.

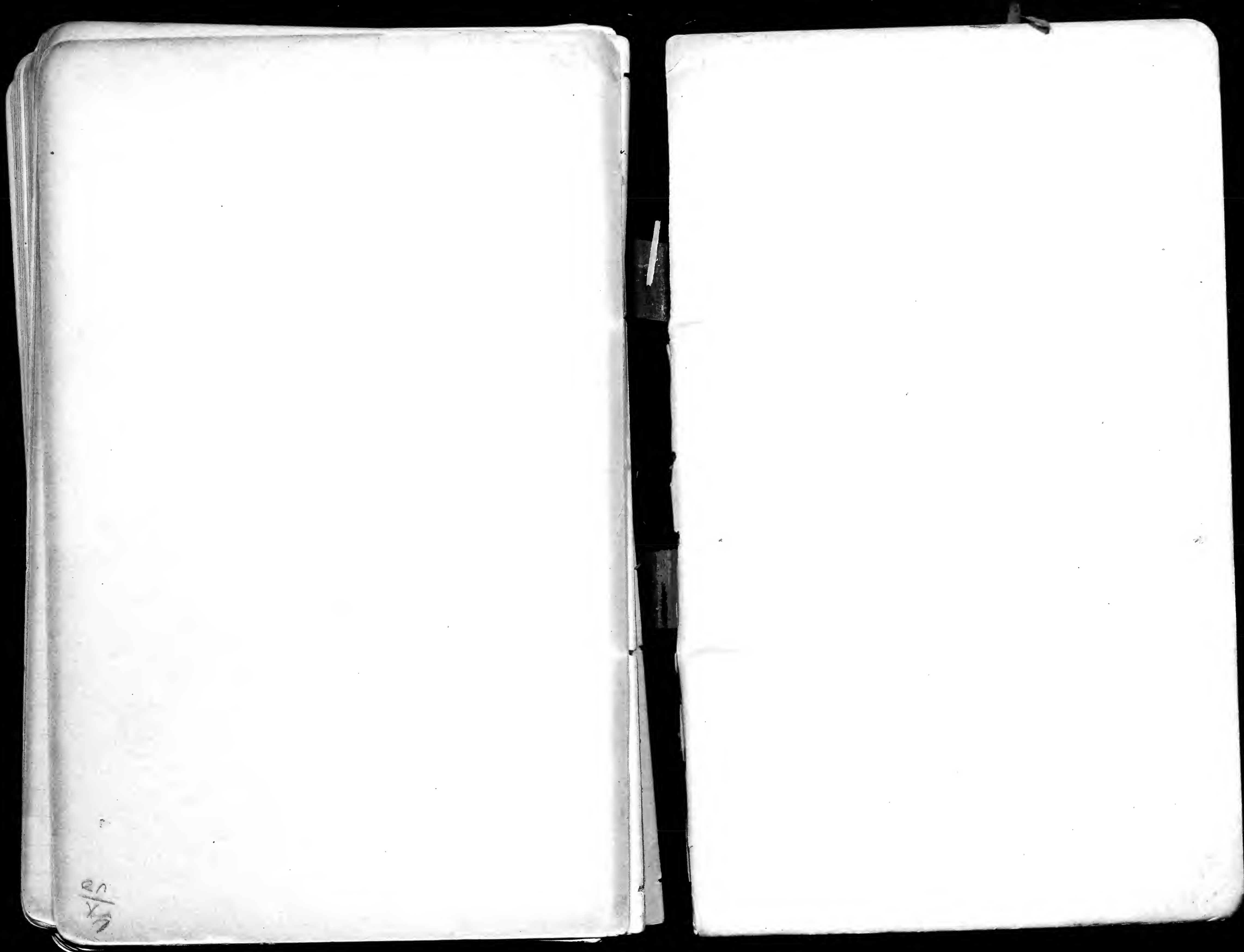
2^d Spr. 12:40, 4100, Left wash at 2 P.M. 4700

Summit 5 P.M. 8100. Camp at 7:30, 7250.

June 23. Camp at 7 A.M. 7200. 10 A.M. 9300

Telescope Peak 2:30 10800.





22
1/2

